INTERNATIONAL ABSTRACT OF SURGERY

FEBRUARY, 1919

COLLECTIVE REVIEW

LESIONS OF PERIPHERAL NERVES

By Major J. FRANK CORBETT, M. C., U. S. A.

THE literature concerning the principles of nerve surgery is so enormous that a complete detailed review of all is impossible. Only such references have been given in full as seem to shed light on fundamental principles. This method has been adopted rather than the making of a complete list of all articles reviewed.

Every wound of injury of a peripheral nerve should be recognized at the earliest possible time so that immediate treatment may be instituted. Lyle (36) has stated: "It is imperative, whether a nerve is divided or not, that paralyzed muscles be relaxed and protected from strain by a suitable apparatus. Under no circumstances must this be deferred as an after-treatment. The postural prophylaxis begins with receipt of the wound and continues after operation until voluntary movement is restored." On the other hand, Tinel (55) warns that splints continually applied holding in a fixed position both paralyzed muscles and those not paralyzed result in extensive joint and tendon lesions. Not only should no over-stretching of paralyzed muscles be permitted, but permanent fixation of tendons and joints prevented by early massage.

This should be given daily and to every paralyzed muscle. In addition Tinel emphasizes the necessity of mobilization and states that all appliances should be easily removable. Jones (28) cautions against allowing a paralyzed muscle to become over-stretched even momentarily when removing the appliance for massage or mobilization.

To attempt to describe all the splints recommended for this purpose would be almost impossible. Mention may be made of the following: the apparatus of Marie and Meige for musculospiral; Lemoing's glove; Dagman Bouveret splint; Jones' cock-up splint for wrist-drop, and Jones' splint for median nerve paralysis and for foot-drop.

Von Lorentz (58) urges early postural treatment and gives as an additional argument the statement that over-stretching in case of nerve section causes the ends of the nerves to separate to so great a degree that they cannot be gotten together at operation. Jones, Tubby, and Sherren have emphasized the necessity for postural treatment.

There exists considerable difference of opinion between various nerve surgeons as to the proper time for operation. The dangers from latent infection and the possibility of spontaneous recovery argue for prolonged treatment before resorting to surgery. On the other hand, the chance of immediate and certain improvement with early neurolysis decreases with time. There is great variation in choice of time. Wilms (61) explores all cases because it is his opinion that it is easier to approximate and suture nerves when operated upon from the tenth to the fourteenth day.

Borchardt (8) states that the indications for operation are based on neurological examination. Operation should be done in all severe injuries of nerves. The following symptoms are considered to be evidence of severe lesions: total failure of function of nerve, motion and sensation lost; reaction of degenerative and trophic and vasomotor disturbance. Operation as early as the

fourteenth day has been done, but usually six or eight weeks are necessary to allow neurological findings to be established and to allow wounds to heal. The longer operation is deferred in case of compression, the less favorable is the prognosis.

Nonne (41), with a reaction of degeneration and anæsthesia, advises a delay of from six to eight weeks to see if function improves. Nonne states it is impossible in a great majority of cases to determine by neurological examination whether the nerve is severed. Reactions of degeneration and disturbances of sensation and motility may be as great in cases of severe contusion or concussion. Tinel (55) urges no intervention until every item of clinical information is obtained to prove the existence of complete interruption or simple compression, of a total lesion or a partial change, of regeneration that is nonexistent or is simply difficult to effect. This often means a delay of two or three months. On the other hand, an operation must be carried out as soon as possible, once its necessity has been determined upon.

Tinel found sixty per cent of nerve lesions to recover spontaneously with proper postural, mechanical, and electrical treatment. Indications for operation are as follows: (a) absence of regeneration; (b) defective, difficult, or partial regeneration; (c) complete interruption. Hoffman (21) insists on waiting for complete healing of the wound. He emphasizes the persistence of bacteria in the tissues after healing, especially in fracture cases, and therefore urges a delay of from six to nine months. The danger from recrudescence of infection is very great in war wounds. Bond (6) has recorded instances of infection being lighted up by mechanical breaking of joint adhesions. Moynihan (40) waits three months after healing in bone cases, and one month in other cases. He urges correction of joint ankyloses before operating on nerves. "Do not operate until healing is complete, else infection will flare up." The plea made by Sherren for early operation applied to wounds of civil life more especially than to the extensive war wounds with a history of past infection. In like manner the wounds of the South African and Russo-Japanese war do not compare to those of the Great War. Therefore, the indications for operation differ.

The pathology of nerve wounds presents an extensive field. Sherren mentions physiological interruption and anatomical interruption. Tubby (56) has applied the term "concussion of the nerve" to a form of physiological interruption. "It is damage done to a nerve-trunk without actual destruction of axis cylinders, and the damage may consist of an effusion of blood between the fibers following compression of a nerve against bone by the rapid passage of a foreign body in the immediate neighborhood of the nerve. In other cases actual lesion may not amount to hæmorrhage but to a temporary anæmia, or its opposite, hyperæmia."

Heile and Hezel (20) state if the nerve be grazed by a bullet, that an inflammatory exudate may occur in the nerve, causing the contour of the nerve to be altered. The diameter of the swollen nerve may be three times that of the normal nerve. In time this exudate is absorbed, leaving behind more or less intraneural scar tissue and adhesions to nerve sheath. The amount of connective tissue determines whether the interruption is physiological or anatomical. Monsaigeon (39) reports rapid recovery of paralyzed limbs following the liberation of nerves slightly bound by extraneural scar tissue. Tinel explains this on the ground of physiological interruption of conductivity without occurrence of wallerian degeneration. Anatomical interruption as described by various authors may range anywhere from severance of a nerve with separation of its ends to complete fusion of nerve ends in gigantic masses of scar tissue.

Tinel classifies lesions as follows: (a) total or partial section; (b) tearing, crushing or perforating, resulting in whole or part of the nerve being involved with central, lateral, or total neuroma; (c) strangulation by fibrous bands; (d) contusion or attrition shown by hæmorrhagic or fibrous infiltration.

Every cut nerve when allowed to heal, whether completely severed or not, presents an enlarged bulb at the site of injury springing from the proximal segment. This is known as a neuroma. The neuroma consists of the local proliferation and entanglement of regenerated nerve fibers. The neuroma represents an attempt of the axis cylinders to penetrate the connective tissue simultaneously forming. Some of the fibers are strangled, others are deflected and may form Perroncito spirals. Tinel considers tumors formed by thickening of the envelopes, by hæmorrhagic or fibrous infiltration of the nerve, or by neurological elements to be pseudo-neuromata.

When a nerve is anatomically interrupted, certain changes take place in the nerve proceeding from the lesion peripherally so far as the nerve distributes. These changes, first described by Waller (60) in 1850 and amplified by Ranvier (47) in 1873, by Beneke in 1872, by Huber and Howell (23) in 1892, and finally by Ransom (46)

in 1912, are commonly referred to as wallerian degeneration. This consists of at least three distinct processes: first, change and fragmentation of axis cylinders; second, myelin change and absorption; third, changes in the syncytial cells of Schwann. The last process is emphasized in studies on regeneration. Soon after section of a nerve the cells beneath the neurilemma begin to hypertrophy, sending out processes of protoplasm. Numerous nuclei resulting from mitosis soon appear in these bands. These protoplasmic, many nucleated masses are known as protoplasmic bands. Attention was called to them by Bunger in 1891. Howell and Huber described embryonic bands or embryonic nerve fibers in 1892. Lewis considers these protoplasmic bands to be essential to nerve regeneration in that they form a conducting pathway. Ingebrigsten (25) has shown the possibility of axis cylinder growth in plasma, and Clark has found regeneration of nerves in beriberi without change in the neurilemma. Axis cylinders, according to Huber, have some power of penetrating scar tissue. Spontaneous repair of severed nerves has been recorded where a considerable gap had to be bridged. Notta's (42) case is an example. Notwithstanding the above exceptions, the new conduits formed by protoplasmic bands offer the best channel for regeneration. Korybutt-Daskiewicz considered the proliferated sheaths of Schwann as anlage for new axis cylinders.

On section of a nerve the cut axis cylinders of the proximal stump, both medulated and non-medulated, split up into numerous branches. Ransom says there may be an immense overproduction, reaching to as great as from twenty to sixty times the original. This is exclusive of the so-called abortive regeneration changes in fibers. In the proximal direction the medulated fibers do not degenerate for more than a fraction of a millimeter, but the non-medulated may degenerate for a distance of 1 cm.

Regeneration is now generally considered to occur by a downgrowth of the axis cylinders from the proximal portion. Such has been shown by the work of Ranvier, Howell and Huber, Strobe, Van Lair and Ransom. The multiplied new axis cylinders try to find their way into the distal segment of nerve. Bunger in 1891, Bethe in 1901, and Kennedy in 1904, disagree with the generally accepted doctrine of central regeneration. Clinically, at least, contact of the distal segment of a cut nerve insures an uninterrupted path for downgrowth of axis cylinders. This has been done by bringing the scar-freed ends together by suture.

That it was possible for a cut nerve to reunite was proven by Cruikshank (11) in 1795. Cruikshank removed one inch from the vagus nerve of a dog and by subsequent section of the second vagus, after long enough time to allow for the repair of the first, he found that the animal lived and that the sectioned vagus had resumed its function. No suture was done. In 1828 Flourens crossed the brachial plexus of a fowl, using suture material. Baudin sutured nerves in 1836. Bowlby's series, published in 1890, records 81 cases of primary suture done by various men with 37 successful results, and 73 cases of secondary suture with 32 successes. Schmidt's collected cases to 1902 give 66 per cent cures with nerve suture. Tinel in 1917 states that of 108 cases of nerve suture or grafting which he was able to follow, there are 14 failures. These 12 to 15 per cent represent failure. These figures are not from selected cases, but include only 22 cases of complete restoration. The statistics from Germany are not available. The operation consists of much more than mere anatomical location and suture of nerves. Therefore, the technique of nerve suture will be considered step by step. Most of the war wounds of nerves are complicated by extensive scar tissue. Often at the site of the section of the nerve no anatomical structures can be made out.

Dujarier (12) describes three zones in nerve wounds: (a) neurofibrome; (b) zone adherente; (c) zone libre. The neurofibromata may be of considerable size, while the zone adherente may be a mass of indistinguishable scar ten or fifteen centimeters in length. Such damaged nerves can only be found by starting dissection in normal structures in either side of the scar tissue area. The ends of a cut nerve always retract more or less during wound healing and become fixed. This loss of substance can sometimes be corrected by liberating the nerve and exerting mild traction, or by manipulating the limb. Stoffel (53) has shown the effect of limb posture on nerves. Schuller (50) states that a four to five centimeter gap in the median may be corrected by nerve stretching. Heile and Hezel (20) state that gaps up to six centimeters may be closed by liberation of the nerve and the position of the limb. Sharp states that posture can correct only four centimeters of such nerve defects. Oftentimes it is necessary to increase the extent of the gap for the reason that intraneural scar tissue must be removed before suture is done. The necessity for the removal of such a scar in the nerve has been emphasized by Dujarier, Delorme, and Tinel. Borchardt resects until further resection would

make direct suture impossible, and then sutures. Nerves showing some scar tissue in section will functionate if sutured. Dumas (13) at one time actually advocated using scar tissue as a bridge. Failure resulted in every case where this was done. Wilms (61) has used scar as a splint in nerve suture but approximates normal nerve ends. Dujarier has compared the appearance of scar with that of normal nerve. Scar has no fasciculi, glistens, is homogeneous, and has little or poor blood supply when compared to normal nerve. The nerve has fasciculi that on cross section appear as small circles of hyalin and bleed on section from minute blood-vessels. The bringing together of a nerve without twisting or altering its anatomical relationship is important. Stoffel has described a funicular arrangement or grouping of fibers persisting throughout the nerve. On cross section the area of each funiculus may represent the supply to some muscle or group of muscles. Grouped about the areas of motor fibers are funiculi of other nerves. Tinel also dwells at great length on funicular topography. These terms, funiculi and fasciculi, are used to express the same structure.

Borchardt says corresponding nerve tracts should be brought into apposition. On the other hand, Heile and Hezel minimize the importance of such orientation, using for an argument that haphazard suture before such orientation was understood brought good results. Downgrowth of neuraxes, as seen in Perroncito's plates showing regeneration, do not occur in regular columns but often cross in a most irregular manner. Schwann thought it improbable that corresponding fibers as before division unite. Rawa (48) states that nerve centers can innervate organs which do not belong to them, as soon as united by nerve conductors. Langley and Anderson (34), Kennedy (30), and Flourens (14) found that one nerve could be cut and sutured to another with resumption of function.

There is a variety of suture material. Sherren (51) advised the use of chromic catgut as a single through-and-through suture. Thoele (54) uses four epineural sutures of plain catgut. Moynihan (40) advocates nerve sheath suture. Bonnet (7) compares neurilemma to peritoneum in regard to healing and emphasizes its protective function. Schiffbauer uses silk. The use of plain catgut is justified by the work of Dustin, who claims that the healing of a nerve is sufficiently advanced at the end of four days to hold. Ingebrigsten (26) urges the use of ooo vaselined silk thread. Vaseline, according to Ingebrigsten, is not at all irritating to nerves. Stoffel and Vulpius (59) use fine silk or catgut on round needles. For epineural suture they advocate the use of blood-vessel silk. Heile and Hezel speak of puncturing the nerve sheath after suture to allow the escape of exudate. Sherren says silk and other non-absorbable sutures should be avoided as they may give late trouble. Nageotte states the suture must ensure coaptation. Crushing ends of a nerve between suture leads to axis cylinders going astray. According to Nageotte a space of one millimeter is preferable to the danger of crushing. In the choice of instruments Ingebrigsten and Stoffel emphasize the importance of only grasping the nerve by the epineurium when necessary to use forceps. They both recommend fine forceps without teeth or serrations. Vulpius and Stoffel describe cataract knives for cutting nerves, scissors, like manicure scissors, for freeing nerve, thin hooks for raising epineurium, needle electrode, and "tunnelleur."

The blood supply of a nerve is important, both from a question of vitality and a question of hæmostasis. These statements have been emphasized by Grosse (18).

Dumas raised scar in proximity to a nerve with the idea of conserving blood supply. Moynihan cautions against devascularizing nerves. Intraneural hæmorrhage is troublesome and difficult to control. This has been emphasized by Borchardt, Schiffbauer, Edinger and Lewis. Hæmorrhage sometimes has to be controlled by a small hæmostat and fine ligature. Dujarier controls intraneural hæmorrhage by means of compresses, wet and hot. Thoele uses suprarenin and novocaine after operating. This procedure is open to criticism because of the opportunity it offers for formation of hæmatomata.

The use of the tourniquet for the control of hæmorrhage is a debated question. The tourniquet gives a dry field. When it is used the tissues rapidly dry out from exposure to the air, and unless prevented from doing so, will suffer damage. Anæmia of a limb lasting over two hours is hazardous. The pressure of the tourniquet on the nerve for a period of time greater than two hours may cause paralysis. Intraneural bleeding might be masked by a tourniquet and overlooked. In addition, hæmorrhage and hæmatomata are complications that sometimes occur with artificial anæmia. Schiffbauer, Thoele, Grosse, Lorentz and Moynihan condemn the tourniquet. On the other hand, operation in a bloodless field gives an opportunity to recognize anatomy and avoids the escape of blood. Diffuse blood in the tissues interferes with healing. Borchardt, Gibson and Hoffman favor the use of the tourniquet.

Whenever it is possible, the cut ends of a nerve should be approximated. When this is impossible, some means must be provided for bridging the gap. Various devices have been resorted to. Nerve transplantation, nerve crossing, nerve anastomosis, bridging with foreign bodies and tubular sutures are devices that have been used.

Nerve transplantation should be considered first, Philipeaux and Vulpian (45) in 1869 succeeded in transplanting a piece of lingual nerve into the hypoglossal in a dog. Albert (1) in 1876 transplanted a human nerve from an amputation to a patient. Gluck subsequently revived clinical interest in nerve transplantation.

Several kinds of nerve grafts have been made. They comprise: (a) pedicled autografts, suture par glissement (Sicard and Dambrin); (b) free grafts, autografts, homografts, heterografts.

Pedicled transplants are too difficult to come into common use.

With free transplants most investigators have expressed a preference for autografts as against homo- or heterografts. Kilvington (32) places success with autografts at one hundred per cent, with homografts at fifty per cent, and with heterografts at thirty-seven per cent. Forssman (16) ranks autografts first; homografts second; and heterografts third. Forssman compares the use of heterografts to that of bundles of catgut as being equal. Sherren records sixty per cent success with homografts, and forty per cent with heterografts in his series of collected cases. Experimental figures with one hundred per cent of success in the use of autografts cannot be taken as final, so far as clinical work is concerned. Large nerve-trunks for autotransplants are not available in clinical work. To obviate this difficulty, Dean, in 1896, used the radial nerve to supply a defect in the musculospiral. Everyone must admit there is a great discrepancy in size and in the number of axis cylinders between the radial nerve and the musculospiral. To obviate this in some measure, several strands of small sensory nerves have been used. Literature is not very replete with case reports. Ingebrigsten reports one failure where he had used a single strand. Dujarier and Francois report several failures. Gibson has reported a case with improvement limited to one muscle. Dejerine and Mouson indorse this method highly but do not cite cases to substantiate the claim. Ingebrigsten quotes five cases operated upon by Foerster as being followed by improvement.

Homotransplants exhibit wallerian degeneration. Merzbacher considers wallerian degeneration a vital process closely related to regeneration. Therefore, if heterografts do not undergo wallerian degeneration, as claimed by Ingebrigsten, there is a reason for the preference in favor of auto- and homografts. A series of twenty cases where homotransplants secured from amputated limbs and stored at 0° Centigrade in vaseline had been done is reported by Dujarier.

These cases have not been operated upon sufficiently long to give definite results. The homograft has the advantage over the autograft in that large-sized trunks may be obtained. However, Maccabruni (37) found that large nerve grafts become necrotic in the center, whether homograft or heterograft. In portions of heterografts well nourished, he found a slightly modified wallerian degeneration. Ingebrigsten's collected cases give one autograft with one hundred per cent success; three homografts with thirty-three per cent success; and ten heterografts with ten per cent success. The available records of clinical cases are of slight value on account of the short time between the report of the case and the operation. Sherren's collected records of heterotransplants comprise 22 cases, of which 16 were sufficiently late to be of value. Of these, one made a complete recovery and six improved.

The experiments with various grafts done on animals up to the time of Huber were unsatisfactory. There is no conclusive evidence in experiments performed by Gluck, Johnson, Assaky, Bunger, Notthaft, or Willard. Huber performed ten heterografts that survived for one hundred and twenty days or more. These filled defects of six to eight centimeters in length and usually were transplants of cat sciatic into the ulnar of a dog. Of these, five showed regeneration of motor nerves to all muscles, and four showed regeneration of nerves to the muscles of the forearm. These conclusions were reached from making stimulation of the nerve and obtaining muscle twitches, and from histological examination.

Ingebrigsten made a study of heterotransplant. He concluded that heterografts did not undergo wallerian degeneration, but that they became necrotic; therefore, that regeneration could not occur through them. The preponderance of evidence shows that autografts are most susceptible to regeneration, but that some regeneration may occur in a heterograft.

Nerve anastomosis or switching a portion of a normal nerve-trunk into a degenerated trunk has been described under a variety of terms: "nerve grafting," "greffe nerveuse," "nervenpfropfung." Letievant made a flap from the central and peripheral end of a divided nerve and united

them. This is sometimes used in a variety of modifications but is generally condemned. Mac Kenzie (38) claims to have bridged a gap of ten inches by such a procedure. Gratzl (17) used this method during the European war and reports successful results. Hofmeister (22) switches the proximal cut ends of wounded nerves into a normal nerve-trunk and then anastomoses the distal degenerated nerves with the same nerve into a slit at a more peripheral point. These methods have not been sufficiently established either clinically or experimentally to make any recommendation possible. Stoffel's "implantation" consists in switching a small normal nerve branch into a larger degenerated trunk.

"Nerve crossing" differs from anastomosis in that the entire thickness of both normal and degenerated nerve is cut through and the ends sutured. This was done by Flourens in 1828. Ballance in 1895 made application of this in suturing the facial to the hypoglossal. The greater number of clinical cases of nerve crossing have been done in connection with the seventh nerve. Sherren collected 40 cases of suture of the facial nerve. Of these, 8 were nerve crossing, 6 with the hypoglossal, and 2 with the spinal accessory. Voluntary motion occurred in all. There were 32 cases of anastomosis, 20 with the spinal accessory, and 12 with the hypoglossal. While motor improvement occurred in all, the best results so far as dissociation movements were concerned occurred in the hypoglossal series.

Kennedy (31) crossed the median and ulnar to the musculospiral, and secured full restoration of function. By stimulation experiments with the brain he found indications of interchange of cerebral function. Kennedy crossed the spinal accessory to the facial in a clinical case in 1899. Langley and Anderson crossed the phrenic to the cervical sympathetic; the cervical sympathetic and the recurrent laryngeal; the cervical sympathetic and phrenic. Stimulation of the sutured nerve gave responses corresponding to peripheral distribution. Kilvington divided the sciatic and sutured the peripheral ends of the internal popliteal to the internal and external popliteal. Regeneration was considered complete, but this was not proven by histological examination. Rawa crossed the posterior tibial and peroneal, and stated that nerve centers can innervate organs which do not belong to them as soon as united by nerve conductors.

Other methods have been used to bridge defects in nerves. Various substances have been employed with the purpose of producing either a potential or an actual avenue for downgrowth of axis cylinders. Various absorbable materials have been used in the form of a solid cylinder. Other substances less absorbable have been used as a tube. This is the so-called "tubular suture." Huber employed bundles of catgut made up of eight No. 3 chromicized threads bound together with fine catgut. With these some regeneration is possible. This procedure differs from Assaky's suture à distance. In the latter a single strain of suture material was supposed to furnish a trellis upon which the nerve might grow. Bone tubes, designated as Van Lair tubes, consisting of decalcified bone, have been used and offer as much success as bundles of catgut. Payr (43) advocated the use of magnesium tubes with the idea of keeping an open channel for downgrowth of axis cylinders. Formalized calf arteries were prepared by Foramitti (15) and used in a few animal experiments. These tubes of Foramitti were employed clinically by Hashimoto and Tokuika (19) in the Japanese-Russian war. Their use was in connection with neurolyses, and does not clearly establish the value of this procedure.

Fascial tubes have been employed by Kirk and Lewis (35). Nerves will grow down these tubes in dogs with re-establishment of anatomical function. The few cases reported in literature done by this method have not given definite results, especially when operated upon in the presence of scar tissue. Starr stated that he had seen several failures from this operation. The author of this paper has no knowledge of any successful case, but has seen several bad results. Kredel (33) also suggested the use of fascial tubes in 1915.

The question of reformation of scar tissue when operating in the presence of large cicatrices and consequent strangling of nerves following repair is a very important one. In war wounds often enormous masses of scar tissue are in the field of operation. So dense is this that wide dissection must be practiced to find the nerves at all. To prevent the postoperative compression of nerves, various devices have been resorted to. These in brief are: (a) making a new trajectory for the nerve in normal muscle or subcutaneous fat; (b) investment of the nerve with various protecting membranes. These include: (1) sheaths of fascia, (2) sheaths of fat, (3) veins, either autogenous or formalized heterogenous, (4) bone tubes, (5) magnesium tubes, (6) galalith tubes, (7) rubber tubes, and (8) hernial sacs.

Lewis suggested fascial tubes. Bonnet urges either free fatty grafts or hernial sacs. Borchardt used pedicled fatty grafts as less liable to break

down and become infected. Kanavel (29) has successfully used free fat grafts. Von Lorentz (58) mentions fatty autogenous grafts. Tinel condemns the use of all sheaths except over roughened bone. Ingebrigsten in place of investing membrane uses vaseline. Bonnet emphasizes the importance of closing any defects in the neurilemma to prevent painful adhesions. This he terms isolation of nerve fibers. Grosse, Auerbach, Schiffbauer and Ferrand have transplanted liberated nerves to a new muscle bed. Hoffman (21) criticises this procedure and urges investment of the suture line with grafts of fascia. Stoffel in his review of neurolysis says results are bad after simple nerve liberation when no wrapping has been done. He urges the use of calves' hardened veins and peritoneum. Bittorf (5) states that fatty sheaths become adherent and he advocates the use of formalized calves' arteries and celluloid tubes. Auerbach (3) advises tubes of galalith for this purpose. Heile and Hezel use rubber tubes. Tinel believes that three principles must be observed if scar tissue invasion is to be avoided: (a) asepsis or sterilization of the wound that comes only by lapse of time; (b) perfect hæmostasis; (c) early passive motion. Moynihan does not approve of any form of investing membrane.

The arguments against investing membrane are: (a) that they deprive the nerve of nourishment; (b) that they cause increased connective tissue formation; (c) that they increase danger of infection; (d) that their use prolongs the operation.

Neurolysis or freeing a nerve from compression by scar tissue offers many brilliant results. The earlier this operation is done, the better the outcome. Of those reported by Hashimoto and Tokuika, 43 in all, 25 gave good results, roughly varying with the length of time between operation and injury. Results of neurolysis after two hundred days were always doubtful. Monsaigeon reports immediate return of function following liberation of the radial nerve from scar. Such results are common. Thoele (54) reports 17 neurolyses with marked improvement in 6 cases.

The use of investing membranes in connection with neurolysis has been discussed. Neurolysis is indicated in simple compression. Unfortunately, it is not always easy to recognize compression early. Tinel (55) differentiated compression from interruption in that in compression muscle tone is not lost and there is a reaction of partial and incomplete degeneration, irregular anæsthesia, absence of formication, and absence of trophic disturbance.

BIBLIOGRAPHY

1. Albert. Einige Operationen au Nerven. Wien. med. Presse, 1885.
2. Assaky. De la suture des nerfs à distance. Arch. gén. de méd., Par., 1886, p. 529.
3. Auerbach. Zur Behandlung der Schussverletzungen peripherischen Nerven. Deutsche med. Wchnschr., 1915, xli, 254.
4. Idem. Galaeith sur Tubulization der Nerven nach Neurolysen und Nervennahte. Muenchen med. Wchnschr., 1915.
5. Bittorf. Deutsche med. Wchnschr.
6. Bond. Recrudescence of sepsis in healed wounds. Brit. M. J., 1915, ii, 467.
7. Bonnet. De l'isolement et de la protection des trones nerveux dans les operations de restauration des nerfs. Lyon chirurg.
8. Borchardt. Ueber Schusse ins besondere Spaetchirurgie. Beitr. z. klin. Chir., 1916, Hft. 1.
9. Bunger. Ueber die Degenerationes und Regenerationes Vorgange an Nerven nach Verletzungen. Beitr. z. path. Anat. u. z. allg. Path., 1891, x, 321.
10. Clark. J. Comp. Neurol., 1914, xxiv, 61.
11. Cruikshank. Experiments on nerves, particularly on their reproduction. Philosophical Transactions, 1795, abridged xvii, 512.
12. Dujarier and Francois. Sur vingt cas de greffe homoplastique dans les sections nerveuses. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 43.
13. Dumas. Liberation des nerfs et recuperation fonctionelle. Bull. et mém. Soc. de chir. de Par., 1916, xlii, 271.
14. Flourens. Recherches experimentales sur les propriétés et les fonctions du system nerveux dans animaux vertébrés.
15. Foramitti. Zur Technik der Nervennaht. Arch. f. klin. Chir.
16. Forssman. Zur Kenntnis des Neurotropismus. Beitr. z. path. Anat. u. z. allg. Path., 1900, xxvii, 407.
17. Gratzl. Schussverletzungen peripheren Nerven. Beitr. z. klin. Chir.
18. Grosse. Beitr. z. klin. Chir., 1915, p. 306.
19. Hashimoto and Tokuika. Ueber die Schussverletzungen peripherischen Nerven und ihre Behandlung. Arch. f. klin. Chir., 1907, p. 84.
20. Heile and Hezel. Unsere bisherigen Erfahrungen bei der Behandlung im Kriege verletzer periphen Nerven. Beitr. z. klin. Chir., 1915, xcvi, 299.
21. Hoffman. Unsere Erfahrungen mit der chirurgischen Behandlung der Schussverletzungen peripheren Nerven. Muenchen med. Wchnschr., 1916.
22. Hofmeister. Ueber doppelte und mehrfache Nervenpfropfung. Beitr. z. klin. chir., 1915, p. 96.
23. Howell and Huber. A physiological, histological and clinical study of degeneration and regeneration in peripheral nerve fibers after severance of their connection with nerve centers. J. Physiol., 1892, 1893.
24. Huber. A study of the operative treatment for loss of nerve substance in peripheral nerves. J. Morphol., 1895, xi, No. 3.
25. Ingebrigsten. Studies of degeneration and regeneration of axis cylinders in vitro. J. Exp. Med., 1913, xvii, 182.
26. Idem. Sur la transplant des nerfs. Lyon chirurg., 1916, xiii, 829.
27. Idem. Contribution to the biology of peripheral nerves in transplantation. J. Exp. Med., 1916, xxii, 418.

28. JONES. The suture of nerves. Brit. M. J., 1916, i, 641.
29. KANAVEL. Transplantation of free flaps of fat. Surg., Gynec. & Obst., 1916, xxiii, 163.
30. KENNEDY. Histological changes occurring in ununited divided nerves. Brit. M. J., 1904, ii, 729.
31. Idem. On the restoration of co-ordinated movements after nerve crossing with interchange of function of the cerebral cortical centers. Philosophical Transactions, Lond., 1901, cxciv, 147.
32. KILVINGTON. An investigation on the regeneration of nerves with regard to surgical treatment. Brit. M. J., 1908, i, 1414.
33. KREDEL. Ueber das Verhalten der operierte Schussverletzte Nerven ueber plantzten Fascielappen. Zentralbl. f. Chir., 1915.
34. LANGLEY and ANDERSON. The union of different kinds of nerve fibers. J. Physiol., xxxi, 365.
35. LEWIS and KIRK. Regeneration of peripheral nerves; an experimental study. Tr. Am. Surg. Soc., 1916, p. 486.
36. LYLE. The physiological treatment of bullet and shell wounds of peripheral nerve-trunks. Surg., Gynec. & Obst., 1916, xxii, 127.
37. MACCABRUNI. Der Degenerationsprozess der Nerven bei homoplastischen und heteroplastischen Pfropfungen. Folia neuro-biol., 1911, v, 598.
38. MAC KENZIE. Resection of the sciatic nerve. An. Surg., Phila., vol. l, 295.
39. MONSAIGEON. Inclusion de nerf radial dans une cicatrice. Bull. et mém. Soc. de chir. de Par., 1916, xlii, 408.
40. MOYNIHAN. Injuries of peripheral nerves. Surg., Gynec. & Obst., 1917, xxv, 595.
41. NONNE. Ueber Kriegsverletzungen der peripheren Nerven. Med. Klin., 1915, xi, 501.
42. NOTTA. Sur un cas de regeneration des nerfs du bras à la suite de leur destruction dans une étendue de cinq centimetres. Arch. gén. de méd., Par., 1872.
43. PAYR. Beitrage zur Tech[illegible] der Blutegefaess und Nervennaht nebst Ver[illegible]dung eines resorbibaren Metalles in der Chir[illegible]gie. Arch. f. klin. Chir., 1900, vol. lxii.
44. PERRONCITO. Die Regeneration du Nerven. Beitr. z. path. Anat., 1907, xlii, 354.
45. PHILIPEAUX and VULPIAN. Note sur des essais de greffe d'un troncon du nerf lingual entre des deux bouts de nerf hypoglosse après excision d'un segment de ce dernier nerf. Arch. de physiol. norm. et path., Par., 1870, iii, 618.
46. RANSOM. Degeneration and regeneration in peripheral nerve fibers. J. Comp. Neurol., 1912, vol. xxii.
47. RANVIER. De la regeneration des nerfs après leur section. Compt. rend. Acad., Par., 1873, p. 491.
48. RAWA. Ueber das Zusammenwachsen der Nerven verschiedener Bestimmungen und verschiedener Funktionen. Arch. f. Anat. u. Physiol., 1885, p. 298.
49. SCHIFFBAUER. Operative treatment of gunshot injuries to the peripheral nerves. Surg., Gynec. & Obst., 1916, xxii, 133.
50. SCHULLER. Die Verwendung der Nervendehnung zur operativen Behandlung von Substanzverlusten an Nerven. Wien. med. Presse, 1888, January 29.
51. SHERREN. Some points on surgery of peripheral nerves. Edinb. M. J., 1906, lxii, 297.
52. Idem. Some points in treatment of nerve injuries. Brit. M. J., 1910, i, 130.
53. STOFFEL. Ueber Nervenmechanik und ihre Bedeutung fur die Behandlung der Nervenletzungen. Munchen med. Wchnschr., 1915, lxii, 889.
54. THOELE. Kriegsverletzungen peripheren Nerven. Beitr. z. klin. Chir., 1915, xcviii, 131.
55. TINEL. Nerve wounds. Wm. Wood & Company, New York, 1917.
56. TUBBY. Nerve concussions due to bullet and shell wounds. Brit. M. J., 1915, i, 57.
57. VAN LAIR. De la regeneration des nerfs peripheriques par le procédé de la suture tubulaire. Compt. rend. Soc. de biol., Par., 1895, p. 99.
58. VON LORENTZ. Nervenverletzungen und deren Behandlung. Beitr. z. klin. Chir., 1916, July.
59. VULPIUS and STOFFEL. Orthopadische Operationslehre, 1913, p. 241.
60. WALLER. Experiments on section of the glossopharyngeal and hypoglossal nerves of the frog. Phil. Tr. Roy. Soc., Lond., 1850, p. 423.
61. WILMS. Zur Fruch-Operation. Deutsche med. Wchnschr., 1915, xli, 1417.

ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

ASEPTIC AND ANTISEPTIC SURGERY

Plisson, Ramond, L., and Pernet, J.: Study of Streptococcal Wounds (Etude sur les plaies de streptocoques). *Presse méd.*, Par., 1918, xxvi, 393.

The streptococcal complications of war wounds have claimed much recent attention from surgeons, and at the present time they may be considered as a new morbid entity. The authors therefore think it opportune to report 67 such cases which they have observed.

The streptococci found in wounds originate from the soil, from clothing, or from the natural skin cavities. The germs are rarely found in fresh wounds. In 56 of the cases the germs could not be found within the first forty-eight hours, although the wounds were infected. The infection is usually primary, the microbe being introduced by the traumatizing projectile. The fleshy muscular parts are those most frequently involved.

The general run of wounds will show the streptococcus in about 23 per cent of cases; but in wounds the evolution of which is particularly bad, the figure reaches 84 per cent.

When a wound has been surgically cleansed, the symptoms vary according as it has been primarily sutured or not. If sutured, the onset of streptococcic infection is indicated by pain and thermal elevation. The pain is felt on pressure over the wound. The temperature does not reach its maximum of about 39° until about the fourth or fifth day. The pulse is accelerated but chills are rare. The general picture is that of an erysipelas of the wound wall, the lips of the wound being red and swollen, with an abundant odorless secretion. The œdema in the vicinity recalls that of phlegmasia alba dolens. According to Gross and Tissier, such an evolution never ends in a union by first intention; hence the general rule is to systematically open every sutured wound which has developed a streptococcic infection.

In the case of a wound left open after surgical cleansing, a streptococcic infection is recognized from its physical development, especially the irregular necrosis of the wounded tissues. Poorly vascularized tissue such as tendons, fat tissue, etc., rapidly becomes gangrenous. The wound edges are inflamed, red and œdematous, and secretion is abundant and seropurulent. Granulated tissue replaces the necrosed tissue after ten to fifteen days.

Streptococcic wounds, while not spontaneously painful, are very sensitive to touch. According to the intensity of the general phenomena these wounds may be classified as slight, medium, or grave. Those of medium degree are the most frequent. Severe complications or death from such a cause is rare. In the 67 cases observed there were only 2 deaths, one due to gaseous gangrene, the other a chest wound; the death could be ascribed as much to shock as to infection. Recovery by granulation of the wound area is the general rule.

Streptococcic infection may be suspected in every case where the evolution is not clearly favorable. The principal clinical signs have been enumerated; none of these are pathognomonic and verification must be affirmed by bacteriology. The authors have used the Sacquépée bouillon for their cultures.

Although it has been generally admitted that streptococcal wounds which have been sutured call for immediate opening, the authors have in a limited number of cases maintained the sutures in spite of the intensity of the reactions. In the majority of these cases reunion *per primam* was obtained and the authors think that the practice is without danger where the clinical evolution can be closely supervised.

In the case of a wound left open, the use of disinfecting chemical agents has been found powerless against the streptococcus. The evolution is like that of an ulcer. Cauterization, dressings, or heliotheraphy may aid. The authors have found Thiersch grafts to take well. Secondary suture was tried in 8 cases with 6 successes. This was not done until after the third week. Treatment by specific serum, by injection of colloidal metals, etc., has proved valueless.

Prophylaxis is the best method of struggle against streptococcic infection. Minute and early surgical cleansing and lavage is the most potent weapon of defense.

W. A. BRENNAN.

Adami, J. G., Bowman, F. B., Adams, F., and Others: Combined Inquiry into the Presence of Diphtheria and Diphtheroid Bacilli in Open Wounds. *Canad. M. Ass. J.*, 1918, viii, 769.

In a careful bacteriological study of open wounds made at three important Canadian medical centers in England, there is complete absence of widespread infection of wounds by bacilli diphtheriæ. The Toronto epidemic of such infection is the first recorded among the soldiers of the allied powers during the course of this war.

It is well recognized today that non-pathogenic diphtheroids are widely spread. Even these, while commoner, are not frequent inhabitants of wounds.

Morphologically, and in the early stages, cultural-

ly, diphtheroid bacilli from wounds are, many of them, indistinguishable from bacilli diphtheriæ.

Harmless, non-toxic bacilli may be present in wounds affording cultures possessing the same sugar formula as regards dextrose, lactose, saccharose and dextrine, as does the true virulent Klebs-Loeffler bacillus.

It is not justifiable, therefore, to make a diagnosis of diphtherial infection of wounds, either from smears alone or from stained preparations and cultural characteristics. The demonstration that the bacilli produce toxins, ectotoxins, i.e., the result of inoculation of broth cultures, is alone capable of proving the presence of infection by the true virulent bacilli diphtheriæ.

By the staining, cultural and fermentation tests, four cases of apparent diphtherial infection have been detected in a careful bacteriological study of 306 cases of open wounds. By the decisive test of inoculation, these are reduced to two.

There is a large amount of evidence showing that even isolated cases of diphtherial infection of wounds are distinctly uncommon among the wounded overseas, and complete absence of any evidence in Great Britain that these isolated cases have acted as foci for the spread of the infection to other wounded men. No evidence of a widespread infection of open wounds by diphtheria bacilli has been discovered in Canadian hospitals overseas in Great Britain.

Diphtheroid bacilli of various orders, while not common, are, as might be expected, more frequent in open wounds. There is no evidence that these have exerted deleterious effects. There is a certain amount of evidence that particular species of diphtheroid bacilli characterize particular hospitals.

EDWARD L. CORNELL.

Hawley, G. W.: The Carrel Treatment of War Wounds in 1918. *Am. J. Orthop. Surg.*, 1918, xvi, 354.

During the early part of the war, practically all wounds were infected and the methods of first aid prophylaxis, so successfully employed in industrial surgery, failed completely. In the same way standard surgical treatment failed hopelessly to control infection; no matter how extensively and thoroughly incision and drainage were carried out, suppuration, profound and uncontrolled, was almost universal. Gradually it became recognized that all wounds were potentially infected when received and that the infection involved the deep structures. The infective agents were organisms of unusual virulence, the anaerobic bacteria, hæmolytic streptococci and the gas bacillus.

Carrel divided the problem of treatment of wound infection into mechanical and chemical sterilization. The former consists in the primary anatomical excision of all traumatized tissues, and the removal of foreign bodies. The latter involves the prevention of additional infection in open wounds and the progressive sterilization of the completely open wounds by continuous contact with a chemical agent which is capable of destroying micro-organisms without interfering with normal tissue repair. Carrel's solution is the most successful substance at present.

The aim of surgical treatment today is to secure primary mechanical sterilization with primary wound suture. The operation should be performed within eight hours if possible and not later than eighteen hours after the wound has been inflicted. Cultures of the wound are taken and if hæmolytic streptococci or mixed streptococci and anaerobes are found, the wound is then re-opened and the Carrel treatment immediately begun. It is obvious that from 10 to 30 per cent of wounds cannot be sterilized by operation and that suppuration should occur in some cases sutured early. The rule is to submit these cases to Carrel treatment and secure sterilization with secondary closure as early as possible, thereby limiting to a large extent the number of cases, especially bone cases, which formerly passed on to chronic infection.

Orthopedic surgery has a peculiar interest in the Carrel method, because wounds associated with fractures provide the acid test for any method of sterilization, mechanical or chemical. The Carrel method is also important in the treatment of chronic bone infection. Reliable information places the number of cases of chronic osteomyelitis from war fractures at 170,000 in France alone. It is these unfortunates that orthopedic surgery will be called upon to treat in the future, and the Carrel treatment is the most promising method at present.

J. J. KURLANDER.

Ehrenpreis: Primary Suture (De la réunion primitive). *Presse méd.*, Par., 1918, xxvi, 395.

Ehrenpreis says that the present tendency is toward primarily suturing the most severe types of wounds. In a first period, June, 1916, to July, 1917, the proportion of wounds so treated was as follows: (a) solitary wounds of the soft parts, 49 per cent with either primary or deferred primary suture; 35 per cent secondarily sutured or not sutured; (b) multiple wounds of the soft parts, 16 per cent with either primary or deferred primary suture; 49 not sutured; (c) osseous wounds, primarily sutured as follows: 17 out of 21 knee arthrotomies; 7 of 8 elbow arthrotomies; 32 craniectomies; 3 femur fractures out of 41.

In a second period, July, 1917, to February, 1918, 95 per cent of solitary soft part wounds were primarily sutured and 67 per cent of the multiple soft part wounds.

The indications and contra-indications depend on two factors. First, since it is not an operation of necessity, it needs detailed postoperative supervision by the surgeon for from ten to twelve days. If the number of the wounded is high and does not permit the surgeon to devote the time necessary to each, then this method is not indicated. Secondly, the primary resection and clearance must be minute and long and can only be properly done when there is

no active fighting in the section. Local contra-indications are given by any signs of infection in multiple wounds, etc. Outside of these conditions, the state of the wound or its extent or gravity are not contra-indications of the method.

Although the time elapsed since injury is an important factor regarding infection, yet no absolute period of time can be stated outside of which primary suture ought not to be done. The true contra-indications result from the local and general clinical signs. When the surface appears normal without varicosities or redness about the traumatic orifices; when there is neither lymphangeitis nor adenitis; when the general state is good, showing no signs of shock or infection, then suture may be proceeded with if the other conditions referred to exist.

The perfection of the operative technique is the primordial conditon on which success depends. There must be complete and minute exploration of every part of the wound. This must also be done with the least possible amount of traumatism. Even the gloved finger must not be introduced into the wound or tissues without strict necessity. Blind maneuvering with the finger among the tissues to seek a projectile is extremely injurious to them; moreover, in dealing with the tissues it is better to use the knife than the scissors, which crush as well as cut, and when possible it should be under screen control.

The removal of tissues should follow these rules: (1) The incision for the cutaneous and subcutaneous excision should be elliptical and encroach 2 to 3 mm. into the healthy tissue. (2) The treatment of the muscular tissue is the most important part of the technique, because the difficulty here is to resect what is necessary, without removing too much. The muscle should never be cut perpendicularly to its fibers; it is unphysiological and surgically wrong; in order to reach the fibers sectioned by the projectile it is necessary to pass between two fasciculi in such a way as to expose all the traumatised area with its diverticula, but the sacrifice must stop as soon as the tissues appear healthy and normal.

Vasculonervous lesions should be treated as other tissues, i. e., the first condition for a nerve suture is an economical resection of all tissues liable to necrosis, and for a vascular lesion the free excision of a damaged part of the vessel.

Fracture cases can be sutured provided the traumatized area is inspected and cleansed; but if the least doubt exists regarding the perfection of the operation, it is better to wait for a delayed primary suture.

Craniocerebral wounds are admirably suited to primary suture, leaving only a small opening through which the expulsive force of the brain may discharge products of cerebral disintegration or minor loose fragments which may have escaped during operation.

Delayed primary suture, viz., on the second, third, or fourth day, is particularly indicated when a thick muscular bed has been cut by the projectile or when a large amount of muscle tissue has of necessity been removed in the course of the operation.

The author gives details of the operative technique and of the postoperative care of the wound.

W. A. BRENNAN.

Gibson, C. L.: Surgical Treatment of War Wounds. *N. Y. St. J. Med.*, 1918, xviii, 345.

The author has had an opportunity to observe the treatment of war wounds in both the British and French armies. The accepted method of treatment as practiced by the Allies on the western front aims at the radical excision of all open wounds, removal so far as feasible of all foreign bodies, and the complete removal of all bruised, infiltrated, damaged, or "shocked" tissue. Operations done on this principle by competent surgeons give the surest guarantee against the development of all forms of sepsis, particularly gas gangrene.

In the British army this work is done usually at the casualty clearing stations, which are situated about ten miles back of the lines. The patient is brought here in a carefully warmed ambulance, usually under a sufficient amount of anodyne to diminish shock. He is carefully unloaded in a waiting room, which is well warmed and protected from drafts, and then sent to an examining room, where the surgeon investigates his wounds and decides on the method of treatment.

Where the condition of the patient is too precarious to warrant immediate operation, he is sent to the resuscitation ward. Emphasis is placed on the importance of heat in the treatment of this condition. When the patient has recovered to a state where he can stand operation, he is returned to the operating room.

The English do their major operating in one single operating theater, whereas each French surgeon has his own cramped and very small operating room. The patients are for the most part given general anæsthetic. The skin is disinfected by mechanical cleansing with soap and water and five per cent alcohol picric acid solution.

Where the stress of work is not too great, X-ray examinations are made of each case. The French have developed their fluoroscopy and other means of foreign body localization to perhaps a higher degree than the British.

After operation the patients are returned to the wards, most of them to be evacuated on the first hospital train, if their condition permits. Head, chest and abdominal cases are usually kept at the casualty clearing station for one week. At the base the wounds are redressed and packing removed at a varying time, usually from five to six days. It is stated that the condition of the wound usually allows of early suturing in layers and that the results are generally good, but the author had no means of corroborating this statement from personal experience.

In the French army primary suture of these wounds is done more freely than in the British army and considerable reliance is placed on cultures. If the culture shows streptococcus or bacillus perfringens, the wound is immediately opened and treatment by the Carrel or some other open method instituted. With the French army this means a closer relation between the evacuation hospital and the bases. The French like to have the base hospitals only a relatively short distance away. It is the belief of the best surgical minds in France that a hospital situated at a point farther away than forty to sixty kilometers does not really perform the function of an acute hospital, but rather that of a convalescent home. G. W. HOCHREIN.

ANÆSTHETICS

Mills, A.: The Administration of Anæsthetics to Soldiers. *Brit. M. J.*, 1918, ii, 343.

The nervous system of the young soldier is by no means stable, his reflexes are very sensitive, and he is nearly always a heavy cigarette smoker.

In such cases induction of anæsthesia with chloroform is strongly contra-indicated. With chloroform a large majority of these men develop excitement and struggling and spasm of the limbs and respiratory muscles. If at the moment of onset of such a state of spasm a strong chloroform vapor has been inhaled, it may be retained in the pulmonary alveoli for a considerable time, the percentage of chloroform in the circulating blood may be raised to a toxic degree, and fatal symptoms may appear while the cornea are still sensitive. The heart gives way before breathing can be re-established.

It is doubtful whether a mixture of chloroform and ether is safer than pure chloroform during the induction period. If any anæsthetic effect is to be obtained from the ether element in the mixture, air must be excluded to some extent, and exclusion of air is not permissible if the chloroform element be present in any degree.

Induction with pure ether is attended in these cases with considerable difficulty.

Nitrous oxide gas produces too light and evanescent an anæsthesia to form a satisfactory prelude to ether.

The author has come to the conclusion that an ethyl chloride ether sequence is the best method one can adopt for induction. He has used an inhaler for several years for ethyl chloride devised by Loosley. To have a stopcock filled to the foot of the bag and this connected by rubber tubing with an ether bottle and bellows was an easy matter, and this forms the simple apparatus which he used in giving ethyl chloride ether sequence.

About 3 ccm. of ethyl chloride are sprayed into the bag through the valve. This valve opens when the nozzle of the ethyl chloride tube is pressed against it, and closes automatically immediately after the nozzle is withdrawn, a tube below carrying the discharge well away from the face-piece. The face-piece is applied to the patient's face and the lever of the two-way cock kept in the down position so that the first few breaths of the patient are turned into the bag until it is about half full. The lever is then pulled upward toward the face-piece and the patient breathes a diluted mixture of ethyl chloride vapor and air. The vapor is then strengthened by spraying a little more ethyl chloride through the valve and still a little more until anæsthesia is produced.

Using ethyl chloride alone, the anæsthetic can be pushed until the usual signs appear: fixed eyeball, dilated pupils, and insensitive cornea, before removing the face-piece, and a good minute and a half or more of satisfactory anæsthesia without a trace of cyanosis will be obtained. The strength of ether vapor can be varied within any limits by varying the degree of vigor of pumping and by the admission of more or less air at the face-piece.

The author is convinced that the previous hypodermic of $^1/_6$ gr. morphine and 1/100 gr. atropine is of considerable value. V. C. HUNT.

SURGERY OF THE HEAD AND NECK

HEAD

Bevan, A. D.: Hæmangioma of the Scalp. *Surg. Clin. Chicago*, 1918, ii, 713.

Bevan reports the case of a child, ten months old, dying from hæmorrhage from an ulcerating hæmangioma of enormous size, involving the entire right side of the skull and neck. The hæmorrhage had persisted for ten days and could not be controlled by pressure, which, if sufficiently firm, simply extended the ulceration. The bleeding surface presented on the back of the neck and behind the right ear.

The treatment carried out consisted of the ligation of the right common carotid artery, followed by ligation of the internal jugular vein on the same side. This was deemed advisable in spite of the risk of cerebral anæmia with resultant necrosis.

The patient made a good operative recovery without developing cerebral symptoms. The hæmorrhage from the ulceration ceased. The thick spongy hæmangioma changed very perceptibly in character within twenty-four hours to a hard, firm mass, caused by the coagulation of blood in the large vessel spaces in the tumor. The coagulation extended throughout the entire mass with the exception of a small area at the upper and inner angle of the right eye. The ulcerated area healed slowly.

The hæmangioma at the upper and inner angle of the orbit was successfully treated by injections of

boiling water. When the child left the hospital, this part of the hæmangioma had almost entirely disappeared. L. H. LANDRY.

Morestin, H.: Reconstruction of the Eyebrow (Reconstitution du sourcil). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 1452.

The first attempt to reconstruct the eyebrow was made by Jobert in 1834. He called it an ophryoplasty. He used a strip of the scalp cut in the temporal region to fill the gap. Morestin in some war wound cases found this technique useful. In a recent case he has used a strip from the hairy scalp cut in the frontal region, and he thinks this is best suited for the purpose. The strip was cut with its base toward the nose, extending from the middle of the forehead and coming to an apex well inside the hair line. The pediculated strip was then turned so as to cover the eyebrow region, the hairy part being disposed as required. The autoplasty could not be made so well by cutting a strip in the temporal region. W. A. BRENNAN.

Fischer, L.: The Superior Longitudinal Sinus in Infants; Its Value in Transfusion and for Rapid Medication; Its Adaptability in Procuring Blood for Diagnosis. *Med. Rec.*, 1918, xciv, 399.

The author believes that by the use of the longitudinal sinus a direct channel is provided through which small or large quantities of blood can be rapidly taken from or added to the circulation in infants. By this method shock is minimized, as well as infection. This route, he believes, is also adapted for procuring sufficient blood in the most rapid manner for blood culture, as well as for the injection of sodium bicarbonate in cases of acidosis.

The sinus can be entered through the anterior fontanelle until the second year of age. It grows wider toward the back of the head. The needle is pushed through the posterior angle of the fontanelle; it should be directed downward and backward in line with the sagittal suture; as the sinus lies very superficially, there is no need to go deeper than one or two millimeters. A needle half an inch long of a 20 or 22 gauge, with a sharp point, is best adapted.

As there is negative pressure within the sinus, before injection it is better to withdraw blood, thus making certain that it is actually in the sinus.

Saline or salvarsan solution or any fluid is best given by gravity and should be given slowly. During the injection the infant should be closely watched and its color, pulse and respiration noted. Vincent warns against too rapid injection, as increased intracranial pressure caused vomiting and disturbed respiration, which corrected itself as soon as the flow of blood was checked temporarily. Air pressure in the tube should be released by detaching the syringe before the needle is withdrawn. The author claims that there is no danger of losing too much blood by the puncture, even though the needle is a large one.

In the summary, Fischer claims that the longitudinal sinus shows itself to be the largest venous channel in the body. With this method neither local nor general anæsthesia need be given. The technique is simple. Aseptic principles should be applied and the skin thoroughly cleansed with soap and water; then tincture of iodine should be applied. E. C. ROBITSHEK.

Roy, D.: Some Observations on the Diseased Conditions of the Salivary Glands and Their Ducts. *Med. Times*, 1918, xlvi, 225.

This is a subject to which too little attention has been paid in the past. The author gives a short, concise review of the anatomy and physiology of the salivary glands.

The oral salivary glands are divided into two groups, the more important group constituting the three large pairs of salivary glands, the parotid, submaxillary, and sublingual. There are numerous smaller glands, such as the labial, buccal, palatine, molar, and lingual. The parotid is the largest of the salivary glands and is situated in front of the lower part of the external ear, extending as high as the zygoma and as low as the angle of the lower jaw. This gland is important not only on account of its function, but because of the relation it bears to the surrounding parts and important structures found within the substance of the gland, such as the facial nerve, temporomaxillary, superficial temporal, internal maxillary, and posterior auricular veins, external carotid artery, and the great auricular and auriculotemporal nerves. Stenson's duct is the duct of the parotid gland and runs transversely across the face about one-half an inch below the zygoma.

The submaxillary gland is the next largest of these glands, and is situated in the submaxillary region below the lower jaw and above the digastric muscle. It is in close relationship with the inframaxillary branches of the facial nerve, artery and vein, and hypoglossal nerve. Its duct is known as Wharton's duct, which has an opening on each side of the frenum of the tongue on a distinct ridge of membrane half-way between the tongue and the teeth.

The sublingual is the smallest of the salivary glands. It is lobulated and lies immediately below the mucous membrane of the floor of the mouth at the side of the lingual frenum and produces an oblong eminence distinctly seen when the tip of the tongue is raised. This gland has no common duct, but its secretion is poured into the mouth through ten or fifteen small ducts, which are known as the ducts of Rivinius.

The secretion from the parotid is rich in ptyalin, which makes this gland exceedingly important as the producer of this digestive ferment. The submaxillary and sublingual glands produce mucin, and are important in producing a secretion for the lubrication of food.

He calls attention to the pathologic conditions associated with these glands. Mumps is the common

acute inflammation of the parotid gland. There are many cases of tenderness over the parotid gland accompanied by a little enlargement of the gland, which are due to a stenosis of Stenson's duct. This stenosis may be due to a swelling of the membrane lining the duct or to the presence of a calcareous concretion in the duct. He mentions the frequency of partial or complete deafness following mumps.

What he has said of the parotid applies to the submaxillary and sublingual glands. Acute infection of the submaxillary gland accompanied by suppuration is occasionally met with. He cites the case of a man of twenty-eight, with severe pain on the right side of his throat, swelling, and painful deglutition. The author believed it to be a case of tonsillitis with probable peritonsillar abscess. On examination, he found a large amount of pus extruding from the right of Wharton's duct beside the frenum. Pressure over the submaxillary gland on that side elicited great tenderness. An attempt was made to treat the case by evacuating the abscess through the natural duct in conjunction with hot poultices, but was unsuccessful. The suppurating gland was later removed and the patient went on to an uneventful recovery.

He cites another case of a woman of sixty-eight, who consulted him for what was supposed to be a cancer of the floor of the mouth. Underneath the tongue was a large salivary calculus filling the opening of the right submaxillary duct. It looked like a fungous, warty growth. The patient made a good recovery after removal.

Chronic conditions of the submaxillary salivary glands usually manifest themselves by obstruction of their ducts. If the obstruction continues for any length of time, there is formed a large sac in the floor beneath the tongue, which is known as a ranula. A ranula does not produce pain, but simply discomfort. The treatment varies according to the size. Small ones disappear when the calculus obstructing the duct is removed. Where the ranula has existed for some time and there is a large dilated sac filling the floor of the mouth, nothing short of destruction of the sac or the production of a permanent fistula will be sufficient to cure the case. One method used by the author is that introduced by Brown, of Milwaukee. It consists in making a permanent fistula by running a silver wire through the sac, clamping it with a lead shot, and leaving it in for months. It can be done under cocaine and the wire can be carried by the patient with practically no discomfort.

Another method, introduced by the author following the work of Gifford, of Omaha, is to open thoroughly the ranula sac under cocaine and to wipe out the cavity with normal saline and then with a small piece of cotton on the end of an applicator which has been dipped in pure trichloracetic acid. The whole interior of the sac should be scoured thoroughly with this solution. This may have to be repeated several times, but in the one case reported by the author the results were excellent.

G. W. HOCHREIN.

Blake, J. B.: Recurrent Dislocation of the Lower Jaw. *Ann. Surg.*, Phila., 1918, lxviii, 141.

Blake reports an interesting case of recurrent dislocation of the lower jaw. The patient, a man of twenty-seven, had suffered dislocation of the jaw many times. As a result, he gradually became unable to laugh or yawn without dislocation. He could not sleep without imminent danger of waking to find his mouth wide open and his chin fixed upon his chest, and would be compelled to seek immediate surgical aid. His jaw was reduced at the Boston City Hospital Relief Station, near which he lodged, at least 40 or 50 times, and sometimes more than once in the same night. He had tried bandages but they were of no avail, possibly because he did not wear them long enough for a fair trial; operation was the only form of treatment that offered hope of success.

A careful examination impressed the operator with the disadvantages of attacking the joint itself in a condition so marked as this, and remembering the familiar method by which the lower jaw-bone is held to the skull in the mounted skeleton (a spring tacked above to the temporal bone and below to the coronoid process), he concluded that something of this nature might be effective, that is, that the coronoid process be bridled to the bony skull; and the zygomatic arch suggested itself, at a glance, as the obvious anchorage.

The patient agreed to the operation understanding that he must assume some chance, since there seemed to be no precedent for the procedure. An incision was made along the lower border of the zygomatic arch and the fibers of the masseter separated from it. This incision was well above Stenson's duct and parallel to the facial nerve fibers. With some difficulty the coronoid process was reached; it was much deeper than had been anticipated and the operator was not able to do what he had originally planned. This was to drill through the tip of the coronoid, thread a piece of wire through the hole, and lace this over the zygoma.

The silver wire was looped, first over the zygoma and then brought down and carried through the insertion of the temporal muscle and the periosteum on the front of the coronoid, the ends twisted together, flattened and the wound closed without drainage. The wire loop was long enough to allow the jaw to open for 2 cm., or one inch between the incisors. The masseter was carefully sutured to its origin; bandages held the jaw closed; and the wound healed by first intention. The jaw was immobilized three weeks.

For some time the patient would not open his teeth more than 1 cm., for fear that the jaw would slip, but he gradually gained confidence and a wider range of motion returned. A year after the operation, the jaw became normal and reliable in every way. The X-ray shows that the wire has twisted from its original position, but it does not cause any discomfort and gives a mental sense of security to its possessor.

M. N. FEDERSPIEL.

Tuffier, T., Faure, J. L., and Morestin, H.: Report upon Cranial Losses of Substance (Rapport sur une question au sujet des pertes de substance du crâne). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 1346.

The question proposed to the Surgical Society of Paris by the State Department of Health was as follows: In the case of a soldier with a cranial breach not exceeding the size of a five-franc piece and entirely crowned by a cartilage or bone graft which appears solid and resistant, should such a man be considered as suitable for a retiring pension? If not, what degree of incapacity should be attributed to the infirmity?

The Commission finds that in general a cranial breach cannot be separated from the complications which habitually accompany this lesion, and which may not become manifest until a long period has elapsed. Moreover, the size of a cranial breach is no indication of the actual damage done internally.

From the medicolegal standpoint no matter how excellently a cranial defect has been repaired, the cranium is not normal; and a man who has undergone a cranioplasty should not be deprived of his right to a retiring pension.

If a period of at least three years has elapsed since injury and operation, and recovery has been apparently permanent, with no appearance of functional disturbances, a retiring pension need not be allotted; but a loss of from 10 to 25 per cent of capacity may be considered as the equivalent of a defect.

In estimating the degree of incapacity the encephalomeningeal lesions and the functional disturbances which are possible must be taken into account. There is besides the liability to accidents.

W. A. Brennan.

McArthur, L. L.: Tumor of the Pituitary Gland; Technique of Operative Approach. *Surg. Clin. Chicago*, 1918, ii, 691.

The technique of the above named operation is as follows: Shave the frontal region and the eyebrow on the side to be operated, and prepare the field. The incision is made from the outer edge of the eyebrow to the bridge of the nose, perpendicularly up across the forehead to the hair-line and then in the hair-line to a point three inches or so outward and opposite and above the point of beginning. Dissect back all soft tissues, including the periosteum, and reflect these laterally.

At the upper inner angle of the exposed frontal bone, drill a small hole through the bone and insert a DeVilbiss forceps; make a curved cut from this hole downward to the inner angle of the orbit, and another from the hole outward and downward to the outer angle of the orbit. With a circular saw divide obliquely the supra-orbital arch. Loosen the periosteum from the roof of the orbit. Pry out the fragment of the bone outlined, and with it will come a greater part of the roof of the orbit, leaving the periosteum to protect the structures of the orbital cavity.

Place the piece of bone removed in warm sterile salt solution. With a small rongeur forceps bite off the balance of the roof of the orbit back to the exit of the optic nerve. The contents of the orbit can be depressed and the frontal lobe elevated with a spoon or other retractor, so that the entire free edge of the wing of the sphenoid can be felt with the finger and the anterior clinoid process recognized. By gentle sponging and handling, the opposite optic nerve can be brought into view. Locate the anterior margin of the sella turcica and make a transverse incision in the dura one centimeter in front of the position of the chiasm. Some of the cerebrospinal fluid will escape, enabling the operator to see the horizontal diaphragm of the dura covering the pituitary body when normal.

When a pituitary tumor is present, there will be a convex elevation of the same, distended and pushed upward by the tumor. After removal of the tumor no attempt is made to suture the dura. The bony fragment is replaced and the periosteum sutured over it. A small silkworm gut drain is placed at the lower inner angle of the orbit.

P. W. Sweet.

NECK

Scalone I.: Surgical Considerations on Cervical Rib (Nozioni chirurgiche sulla costola cervicale). *Chir. d. organ. d. mov.*, Bologna, 1918, ii, 275.

Scalone reports the clinical details of a case of a left cervical rib articulating with an apophysis of the first rib, irritating the brachial plexus and exerting pressure on the subclavian artery; the cervical rib was resected.

Scalone makes a general review of the surgical aspect of cervical rib. He classifies it into these types:

1. Those which do not extend beyond the transverse apophysis of the vertebræ to which they belong.

2. Those which extend beyond the anterior margin of the posterior scalenus muscle (with disturbances of nerve plexus).

3. Those whose extremity reaches the anterior scalenus muscle (with the same disturbances as the preceding, adding that of the subclavian artery).

4. Those which pass beyond the anterior scalenus muscle and reach the sternum, as in the case of those completely developed (with the foregoing disturbances).

With regard to the method of termination of the anterior extremity and the connections with the underlying rib, they may be (a) mobile, or (b) fixed to the underlying rib with connections, muscular, fibrous, osseous, or articular.

These types and the nervous and vascular disturbances arising in consequence are described in detail. Without entering into a discussion of the various theories to account for the manifestation of these symptoms, the author is convinced that some irritative traumatic element plays an important part. In his own case the onset of the disturbances

was due to military exercises. He thinks that there are many cases of cervical rib which give no symptom of their existence, and in nearly all cases operated upon, the complications occurred late in life and usually after fifty years of age. The existence of a cervical rib may be revealed by the progress of some pathologic process such as a fracture, tumor, etc.

Regarding the operative technique, the first type of cervical ribs which do not extend beyond the transverse apophysis of the corresponding vertebra have little surgical interest and the relation existing between them and deep-lying organs of the neck are such as do not cause disturbances.

Removal of at least that portion of a cervical rib extended behind the posterior scalenus muscle is necessary when there are disturbances referable to this segment; otherwise it might be preserved. A total resection is not necessary unless there is some positive indication.

Owing to the dangers of an extraperiosteal removal and the equally good results obtained from subperiosteal removal, the author believes this latter method to be that of choice. When the relations with the subclavian vessels are very intimate, a temporary section of the clavicle may be called for, as in operations in the subclavian axillary region.

W. A. BRENNAN.

Loeb, L.: Multiple Transplantations of the Thyroid and the Lymphocytic Reaction. *J. Med. Research*, 1918, xxxix, No. 1.

In former investigations, Hesselberg and the author studied the fate of the thyroid in cases of successive transplantation of the thyroid into the same host. He found that in contradistinction to transplantation of certain tumors, a definite effect of the first on the second transplant could not be established. Loeb wished now to report on experiments in which he tried to enforce the effect of the first transplantation by simultaneous transplantation of a number of lobes of thyroid. It was possible that the quantitative increase in tissue inserted at the time of the first transplantation led to a more marked effect on the second transplant. In other experiments he studied the simultaneous transplantation into the same host of a number of lobes of thyroid derived from different animals, in order to determine how far the lobes from different animals maintain their individual reaction under the conditions of multiple transplantation.

The following conclusions may be drawn:

1. In multiple transplantation of the thyroid, the two lobes of thyroid derived from the same donor behave in a certain number of cases alike and differ in their condition from the thyroid derived from other donors and transplanted into the same host. In other cases the difference between the conditions of the different pieces is not distinct.

2. Even in cases of multiple transplantation of the thyroid the appearance of the lymphocytic reaction in the second transplant is not noticeably accelerated over control cases in which a first transplantation had not been carried out. This is especially clear in cases in which the second transplant and the control had remained in the host during a period of three or four days.

3. In a considerable number of cases of multiple transplantation the first transplants were found entirely, or to a great extent, destroyed, or in a relatively bad state of preservation. If a number of thyroids taken from different animals are transplanted into the same host, the difference in the constitution of these thyroids might by chance have been small as compared to the other factors which all the transplants have in common, such as the injury connected with the experimental interference, the condition of deficient nourishment during the first days following transplantation, and the character of the host; and the animals selected as donors might happen to differ only slightly from each other in the character of their individuality-differentials. Yet in a number of cases the difference in the behavior of the lobes derived from different individuals was quite marked, while the lobes obtained from the same individual were so similar to each other as to permit the conclusion that the differences in the individual-differentials are maintained, even after multiple simultaneous transplantation, and lead to differences in the reaction on the part of the host toward the transplants. In some cases the differences between the thyroids obtained from different animals were very marked indeed; in others they were less so.

The strength of the lymphocytic reaction varies accordingly; it can be very marked around some thyroids and be almost lacking in others. In regard to the second transplants, those removed at early periods are more conclusive than the later ones. From the seventh day on, the lymphocytic reaction is often very marked even in the control; but on the third and fourth days after transplantation this is not yet the case. One should, therefore, find conclusive evidence of the effect of the first transplant on the second, especially in such second transplants, which were taken out at an early period after transplantation. In confirmation of previous results, they found that three and four days after transplantation the second transplants did not show a noticeable increase in the lymphocytic reaction over the controls; neither did the behavior of the connective tissue or the preservation of the acini differ markedly in second transplants and in controls.

They conclude therefore that the multiple transplantation of thyroid does not increase the lymphocytic reaction in the second transplant, no more than the single first transplantation in previous experiments did, and that absence of a lymphocytic reaction in a second transplant may be associated with a decided lymphocytic reaction in one or several of the first transplants. The thyroids retain their individuality in the host and each calls forth a reaction on the part of the host which is only very slightly or not at all influenced by the reaction of the host toward the other transplants.

The author concludes with the following summary:

1. In multiple transplantations of the thyroid, the individuality-differentials of the thyroids of different animals are preserved. They may find expression in a reaction of the host toward the transplant, which is similar in the case of lobes derived from the same animal and differs in the case of lobes derived from different animals.

2. The lymphocytic reaction in the second transplant is not markedly accelerated or intensified over control transplants, even in cases in which the transplantation had been multiple. This is especially noticeable in experiments in which the second transplant had remained in the host during a period of three or four days.

3. In a considerable number of cases of multiple transplantation, the first transplants were found largely or completely destroyed. It is at present uncertain to what extent this is due to unfavorable conditions of a more or less accidental character or to the production of immune substances.

4. The author's results make it very probable that the lymphocytic reaction is in part at least a response of the host to primary homotoxins and that it is not entirely the result of the development of immune substances. It is probable that the cell constituent which, directly or indirectly, gives rise to the original formation of homotoxins may also act as antigen and call forth the production of immune substances, which, after combination with the antigen, act on the host cells in a way similar to the primary homotoxins. GEORGE E. BEILBY.

Reede, E. H.: Toxic Non-Exophthalmic Goiter. *N. Y. M. J.*, 1918, cviii, 452.

Toxic non-exophthalmic goiter is clinically a neurosis of the parasympathetic nervous system, accompanied by perversions of metabolism and accompanied by a goiter, the pathological characteristics of which include a primary retention of colloid with atrophy of epithelium and often a regeneration of epithelium.

Parasympathetic nerve irritability is essentially a relative predominance of that system over its antagonist, the true sympathetic system, and may lie in an innate inferiority of that system or the endocrine glands that reinforce it, or in an acquired exhaustion of the sympathetic system and its related glands through toxic, psychic, or metabolic factors which depress this true sympathetic system. Excess of thyroid secretion *per se* has neither a vagotonic nor a sympatheticotonic effect inasmuch as its sole effect is that of a tissue metabolism accelerator and only exaggerates the pre-existing type of nerve system superiority.

Kendall by feeding to animals intravenously the amino-acids and the active principle of the thyroid gland has obtained a symptom gradient, which at the apex shows a stimulation identical with the accepted picture of the heightened metabolism termed hyperthyroidism and at the base a perversion of metabolism with depression. From his investigation Kendall concludes that: "Thyroid activity in the absence of a simultaneous suprarenal cortex activity does not produce the usual so-called hyperthyroid symptoms but instead a condition of depression."

The author of this article attempts to draw an analogy between the groups into which Kendall's animals fall and the groups into which the cases of non-exophthalmic goiter may be divisible on the basis of blood-pressure and nervous symptoms, inferring as a premise what has not yet been proven by the calorimeter that predominance of the parasympathetic nervous system is accompanied by a slowing or perversion of metabolism in contradistinction to the acceleration of metabolism which obtains in the suprarenal-sympathetic stimulation exemplified by exophthalmic goiter.

Following the blood-pressure classification of Plummer of Rochester toxic non-exophthalmic goiter cases fall into four groups, viz.: (1) constantly toxic high pressure, where the pressure reaches 150 and over; (2) intermediate pressure, constantly toxic, from 130 to 150; (3) constantly toxic low pressure below 130; (4) inconstantly toxic low pressure where the toxicity suffers remissions.

The decision of a symptom being parasympathetic is based upon the clinical description of the effects of parasympathetic stimulation offered by authors on vagotony and physiologists and is not based on the pharmacodynamic reactions in these particular cases.

The author distinguishes between the hypertrophy of the gland termed goiter and the toxic state following oversecretion. He reiterates his earlier expressed statement that the majority of goiters have their origin in childhood as a reaction to a neighboring infection analogous to lymph-gland hyperplasia and that oversecretion occurs only in the presence of three factors later active in the body, which are either toxic, metabolic, or psychic, or a combination of these. He admits the possibility of a non-hypertrophic gland reacting toxically to these stimuli but seems to doubt its probability.

He includes among toxic stimuli recurring neighborhood infections, distant focal infections, and general systemic infections, and suggests that the increased metabolism incited by the infection may be a factor. Among metabolic stimuli are the demands for tissue activity arising in connection with the institution of puberty, the periodicity of menstruation, the changes of pregnancy and the menopause and the maturation of the male gonads; the psychic stimuli include not only those conscious emotions arising from blocking of the primitive instincts but also those effects radiating from emotions which have been displaced through repression below the level of consciousness.

The symptoms which occur are in part the directly related expressions of the original toxic, metabolic or psychic cause, in part the reflection of related diffuse metabolic disturbance, in part the in-

teraction of other endocrine organs, but in the main they are the expression of parasympathetic nerve dysfunction.

Group 1 or the high pressure toxic type simulates the exophthalmic particularly when naturally prominent eyes or much periorbital puffiness are present, but differs radically in its tendency to chronicity. Early symptoms are sympathetic in part, and parasympathetic symptoms appear only on exhaustion until late. One is apt to find in this group: (a) an active focus of infection, (b) a psychic repression of potency, (c) an increased metabolism, and (d) much mental tension.

Three stages characterize the duration of this process: (a) vascular stimulation, (b) fixed vascular hypertension, where the picture is that of a primary hypertensive cardiovascular complex, and (c) cardiovascular degeneration in which to the usual picture of arteriosclerosis and myosclerosis is added a pigmentation, an asthenia, and a mental and motor slowing suggesting the Addison type of endocrinopathy. Some of these cases improve under thyroid medication.

Group 3 or the constantly toxic low pressure type includes the cases of paramount interest and are the cases which furnish the reason for the appearance of the paper. The symptomatology is luxuriantly that of an overfunctioning parasympathetic nervous system which consistently through the individual's life during stress expresses itself predominantly in some particular area of organic distribution. The bodily incapacitation which speedily follows prevents the great energy expenditure which characterizes exophthalmic goiter and the picture is that of a fatigue neurosis instead of a cardiovascular erethism. Consideration of these cases requires on the part of the observer, first, an adequate conception of the effect on each organ of parasympathetic stimulation; secondly, some knowledge of the physiological variations of the individual which are considered normal in the epochs of puberty, adolescence, pregnancy, the menopause, etc.; and thirdly, an elementary acquaintance with the mechanism of personality as determined by the phylogenetic instincts in their cognitive, affective, and conative aspects.

Group 2 includes cases which combine a tendency to cardiovascular degeneration with more or less of the symptomatology of Group 3.

Group 4 comprises cases resembling Group 3 in which periods of normal health intervene between the nervous breakdowns; many of these cases are associated with the adenomata described by Goetsch.

Regarding treatment the author's attitude departs from his custom in the exophthalmic complex where he advises thyroidectomy in the pre-exophthalmic stage and here he relegates the operation to third place.

In non-exophthalmic toxic goiter he advises first the removal of focal infection, secondly, the relief of psychic irritation, and as a final measure a bilateral lobectomy. Presumably the relief of psychic irritation would be attained by psychoanalytic means.

In reference to prophylaxis the author reiterates his belief in the initiation of hyperthyroidism in childhood in association with cephalic extremity infections, particularly those of the gingivæ, and invites more attention to the toxic and psychic traumata of puberty and adolescence as remediable factors in later hyperthyroidism.

It may be noted that he fails to mention in reference to the infection theory of goiter the recent work of Wilson which suggests that the infection acts through neuritic changes in the ganglia controlling the secretion of the thyroid.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Saberton, C.: The Value of X-Rays in the Treatment of Malignant Disease of the Breast. *Brit. M. J.*, 1918, ii, 337.

The cases fall into three main groups: (1) those sent for prophylactic treatment following operation; (2) recurrences; and (3) inoperable cases.

Patients for prophylactic treatment should be sent to the radiologist as soon as possible after operation. It is essential to administer large doses of X-rays, and the rays are measured after filtration through 2 or 3 mm. of aluminum. The scar area, axilla, supraclavicular and postscapular areas should all be treated. This method of cross-fire enables a large quantity of rays to reach the mediastinum. The radiation is greatly facilitated by using the Coolidge tube. In ordinary cases the first course of treatment lasts about three months. A second shorter course is given after two or three months, and subsequent radiations are administered at gradually lengthening intervals.

Local scar recurrences are rare, but if nodules appear, they can with rare exceptions be controlled. It is possible to prevent gross enlargement of supraclavicular deposits and they frequently disappear after vigorous raying. They never break down and ulcerate. It is curious how often one meets with recurrences in the lumbar spine.

Swelling of the arm from lymphatic obstruction is occasionally a troublesome and distressing sequel of operation. Usually it becomes progressively worse and the limb sometimes reaches an enormous size.

The general conclusions arrived at from treatment of cases in this group are as follows:

1. The patients are less likely to have a recurrence of the disease than cases not so treated.

2. Local recurrence in the scar area is rare.
3. Supraclavicular deposits do occur, but can, as a rule, be controlled.
4. Mediastinal recurrence appears to be less frequent.
5. The general health of the patient is improved.

In recurrent cases much can be done to relieve pain and prevent ulceration by efficient treatment; in some cases brilliant results are achieved. Foul ulcerating surfaces heal up, large masses of glands disappear, and a symptomatic cure is obtained.

All inoperable cases should be given the chance of deriving benefit or amelioration of symptoms by X-ray or radium therapy, and frequently both methods are used. Very often what appear to be most hopeless cases do the best, and vice versa. When patients are already cachectic, little can be done beyond giving them some relief from pain. Malignant growths are affected by radiation, both directly and directly. Research has shown that cells in process of rapid division, lymphoid tissue, and the endothelium of the blood-vess ls are especially vulnerable to radium. In inoperable cases inefficient treatment is worse than useless, it is dangerous, as small doses stimulate cell growth. The treatment must be pushed in massive doses to the limit, and in some instances beyond the limit of skin endurance. An important guide is the amount of constitutional disturbances following intensive therapy. At times there is temperature of 102 to 103 for weeks following intensive treatment.

In late X-ray reaction the skin becomes very tough, assumes the appearance of wash-leather and finally sloughs. It occurs in an area having a more than usually heavy bombardment of the rays. It occurs some weeks or months after the patient has ceased treatment, is very painful, and takes a long time to heal.

The author has noticed anæmia develop in about half a dozen inoperable cases where intensive therapy had been given for a number of years. The primary growth remained quiescent, there was no evidence of secondary deposits, and no toxæmia resulting from the cancerous blood. It is known that X-rays have a profound effect on the blood.

The X-rays are of undoubted therapeutic value in inoperable growths. Life is frequently prolonged for years, pain is relieved or alleviated, secondary glands can be controlled and prevented from ulcerating, ulcerated surfaces heal up, and foul discharge ceases. The primary growth often shrivels and at times becomes operable. V. C. HUNT.

Tuffier, T.: Treatment of Purulent Pleural Effusions (Traitement des épanchements purulents de la plèvre). *Presse méd.*, Par., 1918, xxvi, 497.

Tuffier and DePage some time ago published a preliminary account of their method of treating purulent pleurisies already open by chemical disinfection of the cavity followed by closure of the surgical incision of the costopleural wall. Tuffier now reports the findings in 47 cases, 7 of which were medical.

The treatment of closed pleural suppurations consists of three stages: pleurotomy; chemical disinfection; and closure. The pleurotomy varies according as the pleurisy is pneumococcic or not. In the first case a sinple pleurotomy is done in the intercostal space, making the incision very low for drainage. In the second case thoracotomy with resection of one rib is preferred. This allows thorough evacuation and exploration of the cavity and of the lung.

The chemical disinfection is carried out by Carrel tubes and Dakin's fluid, controlled by bacteriologic examinations. This lasts for a time varying from five to thirty days, until the pleural cavity is seen to be sterile.

In the case of fistulized purulent pleurisies, after a thorough bacteriologic examination of the pus, etc., the procedure consists of stripping up the tract after a previous radiologic examination to know its exact conditions. The tract is widely opened so as to give plenty of light and space. Rubber tubes stiffened with silver wire are introduced into the cavities so as to reach all recesses. This is done under radioscopic control. Pleural adhesions are removed as far as possible and Carrel tubes placed. During disinfection pulmonary gymnastics are regularly and methodically employed, and the expansion of the lung is noted daily.

After removal of the Carrel tubes, a dry compress is applied to the wound for forty-eight hours. If the secretions are negative as regards infection, suture is then done. The fistulous tract is first resected, and false membranes which form a veritable shell about the lung are attacked with the bistoury and the lung decorticated. When a complete decortication is not possible, the membrane must be removed where it can be separated from the lung without damage.

Sometimes close adhesions must be separated. After decortication, suture is proceeded with. This latter must not be complete if any appreciable quantity of blood oozes. Tuffier thinks that since the membrane is often infected, it might be better to remove it before completing the chemical disinfection.

The only postoperative complications observed are an occasional new septic effusion, not usually extensive, which calls for opening and sterilization; and a re-opening of the superficial part of the cicatrix. The only inconvenience about this is delayed recovery.

This surgical procedure is the inverse of the older method in which more attention was given to the thoracic wall than to the lung. Here it is the lung and not the wall which claims attention.

All 47 cases operated upon have recovered without any chronic complication. In 11 cases the wound had to be re-opened owing to the formation of new suppurative collections; in a few other cases because of fistula, etc. In 9 cases there was a slight thoracic deformity, and in 1 an important one.

Illustrations of the technique are given.

W. A. BRENNAN.

Péhu and Daguet: Clinical and Radioscopic Researches on Certain Late Sequelæ of Pleuropulmonary War Wounds (Recherches cliniques et radioscopiques sur certaines séquelles lointaines des plaies pleuro-pulmonaires de guerre). *Lyon chirurg.*, 1918, xv, 291.

By the late sequelæ of pleuropulmonary war wounds, the authors mean to indicate certain results found several months after the traumatism, when all osseous, bronchopulmonary, or pleural manifestations, either inflammatory or suppurative, have terminated; the cicatrix is not however immediately fixed as regards its form.

The authors have observed 146 cases of pleurisy in soldiers varying from twenty to forty years old; these men had received, at periods from four months to three years before, a penetrating wound in the thorax due to a projectile, from the immediate effects of which they had recovered before coming to the authors.

Of the 146, on clinical and radioscopic examination one-third were found to have retained no trace whatever of the wound. One-third showed accentuated symptoms of chronic pleuritis with adhesions limited generally to the lower third. Such symptoms are not so well observed from the physical examination as from the radioscopic. The latter is therefore essential in judging the condition of the thorax.

The sequelæ just referred to are observed after cases of extensive hæmothorax which have necessitated numerous punctures, likewise after cases of pyothorax with prolonged suppuration, or in cases in which, owing to various circumstances, drainage has been insufficient. Nevertheless even if the hæmatic or purulent collection has been abundant and of long duration, it is surprising with what facility the anatomic restoration is effected.

From the point of view of the disappearance of these residual manifestations, there is a distinct difference between the bloody effusions, and the traumatic or spontaneous (pneumonic) empyemas on the one hand and the serofibrinous pleurisy of unquestionally tuberculous nature on the other. The first type leaves but few sequelæ; from the second type diaphragmatic or pleural cicatrices arise, the resorption of which is always slow.

The authors call special attention to the proportion of pleuropulmonary tuberculosis observed in cases of thoracic wounds. Some have expressed the opinion that the traumatism does not play any part in the development of tuberculosis, or at most only a problematic part. Such a tuberculosis ought to appear for the first time in the early weeks following the injury, and it is only under such conditions that the traumatism can with certainty be accused of reawakening a dormant and well tolerated condition.

Of the 146 soldiers examined, 3 cases were observed of demonstrated pulmonary tuberculosis and 2 cases of serofibrinous pleurisy of an undoubtedly tuberculous nature. But such cases are reported with the greatest reserve in so far as their dependence on the prior injury is concerned. W. A. Brennan.

Inigo: Surgical Sequelæ of the Grippe (Seculas quirúrgicas de la gripe). *Siglo méd.*, Madrid, 1918, lxv, 829.

The author says that the only complication of grippe which passes into the domain of surgery is pleural effusion. When there is any suspicion after a systematic examination that a patient with grippe has a pleural effusion, an exploratory puncture should be at once made. When properly done, there is not the least danger, and it will end all doubt.

According to laboratory researches made at the instigation of the author, the germ responsible for the pleural effusion is a special streptococcus differing from Pfeiffer's and the commoner forms. This is found in the exudate in enormous quantities accompanied by leucocytes and pus.

The findings have induced the author to intervene surgically without loss of time and before the effusion assumes the macroscopic characteristics of pus, as the patients recover much more readily when in this state. The author's procedure is based on the logical assumption that every infected focus in a closed cavity should be drained when once it is diagnosed.

The author performs a costal pleurotomy. In all cases in which he performed this operation, the results were most excellent. Fever falls, the lung expands, and there are no adhesions. In no case was there a pleural fistula as a sequel.

The author says that the opposition to surgical treatment of the pleural complications of grippe does not come from the patients but from their medical advisers who persist in long continued treatment by the older methods instead of an operation which does not last more than fifteen minutes and may be done under local anæsthesia, the results of which are most secure.

The author generally resects the tenth rib with the ninth or eleventh, preferring a costal to an intercostal pleurotomy. If a trocar does not draw pus, the pleura is incised with the bistoury, the patient put in dorsal decubitus, the wound enlarged with the finger, and the cavity completely drained, after which two permanent rubber drains are placed. W. A. Brennan.

Le Fort, R.: A Wide and Economic Route of Approach to the Cervicomediastinal Space (Une voie économique et large pour l'accès du carrefour cervico-médiastinal). *Presse méd.*, Par., 1918, xxvi, 373.

Le Fort in previous reports on endothoracic surgery recommended methods fulfilling these two essentials: (a) to give all the light necessary by opening a large breach which could, if necessary, be enlarged; (b) on termination of the operation to assure the integral repair of the thoracic wall by the avoidance of all unnecessary mutilations.

The cervicomediastinal space is difficult to approach owing to the presence of the clavicle and of the first rib. A sternocleidocostal flap, outside of a

temporary incision of the sternum, which, being a spongy bone, rapidly reconsolidates, does not injure any important bone, nerve, or muscle, and respects the clavicle as well as the sternocostoclavicular and the sternomastoid articulations.

Such a flap opens up a large breach, giving an easy access to the organs at the base of the neck and to all the upper mediastinum, to the first thoracic vertebræ, and to the summit of the lung. During operation this breach may be enlarged above, below or beyond the median line. Injury of the important vessels is easily avoided. Integral repair of the wall is assured after operation.

Le Fort describes and illustrates each step of his technique for cutting this sternocleidocostal flap, the procedures indicated, and the closure. The chief steps may be summarized as follows:

The sternocleidocostal incision is 10 to 12 cm. long and descends over the sternum as far as the first intercostal space; a horizontal incision of 12 to 14 cm. is then made starting from the lower extremity of the first incision, crossing the anterior face of the manubrium and following the first intercostal space as far as the deltoid; section of the soft parts as far as the bone; dissection of muscles from the posterior face of the sternum and from the sternocleidoclavicular region; median vertical section with the chisel of the suprasternal space, sacrificing the anterior jugular vessels; median or paramedian section of the upper part of the manubrium; freeing the internal extremity of the first intercostal space on its two faces, and freeing the sternal border between the two first costal cartilages; the bone flap can be raised by easy manipulation and without disturbance of any important vessel.

The indications for this technique should not, according to Le Fort, be limited to war surgery, to the extraction of projectiles, or to the treatment of vascular injuries. The method is applicable to the treatment of tumors, foreign bodies, œsophageal or tracheal strictures, adherent plunging goiters, thymic tumors, aneurisms, etc. Facility in reaching the mediastinal space will also extend the indications of practical surgery in a region which most surgeons approach with hesitation. W. A. BRENNAN.

TRACHEA AND LUNGS

Freudenthal, W.: Recurrent Teratomatous Growth of the Trachea. *N. Y. M. J.*, 1918, cviii, 582.

The patient, aged twenty-seven years, had been tracheotomized on account of diphtheria when he was fourteen years of age. Following operation he was well until five years later, when he was examined by the author for dyspnœa, especially on exertion. His voice was clear. Examination disclosed a web-like, grayish looking mass, about an inch below the glottis, involving the greater part of the trachea, with only a small opening anteriorly. This was apparently due to the former tracheotomy. The nose and throat were negative.

Under suspension laryngoscopy the mass changed to a reddish color of some dimension. Under a general anæsthetic the patient became so cyanotic that a hurried tracheotomy had to be performed. All of the visible growth was then removed and everything thoroughly cauterized. The wound soon healed and the patient was discharged breathing normally.

He returned a year later and all the visible growth was removed under general anæsthetic. Nine months later he returned again for treatment. Under rectal anæsthesia effort was made to extirpate all of the intratracheal mass but profuse hæmorrhage forced cessation of the attempt before much of the mass was removed. A few days later, again under rectal anæsthesia, the trachea was opened and great masses of granulation tissue were found and removed with very little hæmorrhage, the pathologist reporting the growth to be an endothelioma. Radium was applied with very good effect. He was again discharged.

In February, 1915, a new mass was found springing from the lateral wall of the trachea and another mass anteriorly. Under intratracheal anæsthesia he was again operated upon and the tumor again removed, no trouble recurring for several years.

In 1918 tracheal examination showed about one inch below the glottis on the left side a whitish mass reaching almost to the center of the tracheal lumen, resembling a vocal cord. On the right side was a smaller, congested, and also immobile one. Being unable to stretch the stenosis by long intubation tubes and bougies, operation was again done. The patient died of hæmorrhage soon after. The pathologist reported that the fragments did not resemble the organs from which they were removed, microscopical section presenting several interesting features which led to the diagnosis of a teratomatous growth. The microscopic diagnosis was myxochondrocylindroma.

The author concluded that the white mass seen intratracheally consisted of neoplastic and scar tissue. He was able to find only 2 cases in the literature resembling this one. The great value of the direct method in operative work in the lower air tract has been demonstrated. Nevertheless in the case here cited very little was accomplished under local anæsthesia and even under a general anæsthesia the attempt to extirpate the neoplasm had to be given up on account of severe bleeding.

It seems plausible that in connection with other means, the galvanocautery, if applied carefully under a local anæsthetic by means of Lynah's galvanocautery point, should be of value in non-malignant cases. H. H. FREILICH.

Marion, G.: The Extraction of Intrapulmonary Projectiles (A propos de extraction des projectiles intrapulmonaries). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 1439.

Marion gives statistics of his method of removing intrapulmonary projectiles to which he has ad-

hered in spite of criticism, by prior fixations of the lung to pleura. He believes his method is not so deserving of criticism, since the actual results are good.

In detail Marion's method may be summed up as follows: finding the location of the projectile by means of a compass; resection of a rib; fixation of the lung to the pleura by three or four sutures of catgut; incision of the pleural wall between these sutures, through which the finger seeks the projectile.

Marion operated upon 158 cases, which covered almost every type in this class of surgery, including several cases of projectiles situated in the hilum region. In 156 cases he succeeded in finding and extracting the projectile. In only seven of these was he obliged to resort to a two-stage operation because of difficulty in finding the projectile. There were 2 deaths, only one of which could be imputed to the operation.

Marion thinks that methods which are claimed to be better than his cannot show such results. Petit de la Villeon's control method is attractive and Marion would adopt it, especially in the case of cortical projectiles, if he had the least trouble with his own method. Marion was forced to use Duval's method in 12 cases in which he could not fix the lung to the pleura. These patients showed more shock and fatigue than in the case of his own method, and three had subsequent purulent pleurisies. Twelve out of the total 156 extractions developed this complication, but all were cured. He has not tried Le Fort's method for extraction of projectiles from the hilum region. He has always been able to extract them by his own method.

Marion thinks that while his procedure has not so much brilliancy as the methods of Duval and Le Fort, it is sure and harmless. W. A. BRENNAN.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Burke, J.: Surgical Aspects of Right Subphrenic Abscess. *Ann. Surg.*, Phila., 1918, lxviii, 383.

A subphrenic abscess may be defined as a circumscribed collection of pus beneath the diaphragm and in contact with some portion of it. The falciform ligament plays a decided part in limiting the extent of such abscesses and clinically most of them are to the right of it. They are due to infectious processes in the liver, gall-bladder and ducts, duodenum and appendix. Of the 18 cases observed and recorded by the author, 7 followed upon acute perforation of the appendix and occurred as a part of a general peritonitis, or as an extension up the lumbar peritoneal fossæ from the pelvis, or as a pyelophlebitis, or as a lymphatic extension through either the retroperitoneal tissue or through the lymphatics around the deep epigastric artery to the falciform ligament.

Little has been added to the knowledge of the diagnosis since Von Leyden's notable monograph published in 1880, and there is still a woeful lack of details in the descriptions of the physical signs. The author has noted in the analysis of his cases an irregular line of the upper border of liver dullness, the highest point being in the midaxillary line or in front of it, not agreeing with the uniform parabolic dullness found in empyema. Respiratory mobility in all cases in which there was no pleural effusion was preserved. Although Von Leyden laid stress on the absence of cough and expectoration in subphrenic abscess, there was a slight short painful irritating cough in most of the author's cases. As the case progresses there is a slight increase in the right lower chest dimensions and the left side of the chest moves more than the right. If gas be present, and most authorities state that it is usually present, although the author did not find it in a single one of his cases, there is pulmonary resonance, next tympany, and then liver dullness. In some cases there are heard early in the disease perihepatic friction sounds. Compression of the right base is often found and the author found in two cases that the heart was displaced. In some instances the liver was pushed downward. In about half of the cases the onset was sudden, while in the other half it was insidious. In most of the latter there was little or no pain. Vomiting very frequently occurs as a symptom and hiccoughing occasionally. Localized swelling in the abdomen is always a late sign. There are infections of the pleura in 33 per cent of the cases. This must be borne in mind in making exploratory punctures. The author uses a needle three inches long with a good caliber so that deep collections may be reached and so that fibrin will not prevent the aspiration of pus.

The treatment of a subphrenic abscess is always surgical, although a certain number will recover without intervention. This may occur by encapsulation and absorption or by rupture into a bronchus. An abscess has also been known to rupture into the alimentary tract or find its way out through the umbilicus. The mortality has been variously placed between 35 and 55 per cent. This may be explained upon the basis of late diagnosis and poor judgment in the route of attack used. The author prefers the abdominal route in most cases and combines it where necessary with the transpleural method. He believes that in this manner multilocular abscesses will not be overlooked. GATEWOOD.

Trias Pujol: Some Dispositions of the Gastrocolic Ligament (Sobre algunas disposiciones del ligamento gastro colico). *Arch. espan. de enfer. d. apar. digest.*, Madrid, 1918, i, 399.

That portion of the great or gastrocolic omentum comprised between the greater curvature of the

stomach and the transverse colon, called the gastrocolic ligament, presents many variations which are important in connection with surgical operations in this region. These variations consist, first, in the dimensions of the ligament, and secondly, in its relation to the mesocolon.

The author's researches have been made in a large number of cadavers. In 17 out of 30 cadavers the mesocolon was found fused in part with the gastrocolic ligament, or in about 56.6 per cent of the cases. When the mesocolon is very large and is not fused with the ligament, there is a cavity between the two (gastrocolic diverticulum) which should not be confused with the embryonal and normal cavity existing between the two layers of gastrocolic omentum.

This gastrocolic diverticulum sometimes coalesces with the omental cavity and at other times communicates with it by an orifice formed by the partial fusion of the ligament and mesocolon. The diverticulum may be simple, multiple, or ramifying.

The rather frequent abnormal forms of the transverse colon favors coalescence of the two organs referred to.

The surgeon in operating should always bear in mind the variety of relations herein referred to.

W. A. BRENNAN.

Downes, W. A.: Congenital Hernia of the Diaphragm. *Surg., Gynec. & Obst.*, 1918, xxvii, 393.

Congenital hernia of the diaphragm occurs much more frequently than is generally supposed. X-ray offers the best means for diagnosis. Many cases are discovered accidentally in the routine examination of patients. The symptoms may be those of pyloric stenosis or intestinal obstruction. Hernial protrusion is usually through a defect in the left side of the diaphragm; rarely through a normal opening. In the majority of cases there is no hernial sac. The case herewith reported occurred through the œsophageal opening.

The patient was a child, seven years of age, in whom symptoms of vomiting had recurred since the age of twenty months. There were short periods of freedom from symptoms up to within the last year and a half, since which time the vomiting had been almost continuous. Weight was 27 pounds. X-ray examination showed the stomach to be above the diaphragm. At operation the œsophageal opening was found dilated to two inches in its transverse diameter, and the entire stomach with about three inches of the duodenum was in the thoracic cavity.

On account of adhesions at the pyloric end of the stomach it was not possible to reduce the stomach and duodenum into the abdomen. As it was necessary to overcome the symptoms of obstruction, the greater curvature of the stomach was drawn through the œsophageal opening, and an anterior gastroenterostomy performed. The stomach was anchored to the œsophageal opening by silk sutures. The patient was discharged symptomatically cured. The gain in weight was ten pounds in four months.

Greenwood, H. H.: Ventral Hernia; a Device to Strengthen the Abdominal Wall. *Brit. M. J.*, 1918, ii, 312.

Repair of the majority of cases of large ventral hernia can be adequately effected by one of the established methods, but occasionally one is encountered in which the ordinary methods are inadequate.

These cases are usually the sequel of sepsis. Such was the sequence in the case to be described. Hysterectomy for impacted fibroid of the uterus was performed in February, 1913, by the abdominal route. This was followed by sepsis of the wound and discharge of urine through a fistulous tract, which finally closed, but allowed the development of a huge ventral hernia in the middle line, extending from above the umbilicus to the pubes.

On July 26, 1918, a transverse incision curving downward was made midway between the umbilicus and pubes, extending from the outer border of each rectus. A crescentic piece of skin was excised and the flaps dissected up and down. A longitudinal incision through the anterior layer of fascia of each rectus was made close to and parallel to the outer border of the muscle, the flaps dissected off the muscles and turned inward. The muscles were freed also on their posterior aspect nearly to their outer margin, and then by pulling on the flaps it was found possible to draw them inward almost to the median line.

On one side it was necessary to peel outward the diaphanous layer of combined transversalis fascia and peritoneum from the posterior layer of the rectus sheath and in the angle the free edge of the flap was fixed by a series of interrupted stitches of catgut. The opposite flap was similarly treated, the two forming a firm bed on which a McGavin filigree was placed. The rest of the operation was completed on familiar lines. The patient made an uneventful recovery.

V. C. HUNT.

GASTRO-INTESTINAL TRACT

Dubard: Gastroduodenal Ulcer and Chronic Appendicitis (Ulcère gastro-duodenal et appendicite chronique). *Lyon chirurg.*, 1918, xv, 356.

The author calls attention to the frequent coexistence of appendicitis with gastric and duodenal ulcers. In 36 laparotomies for ulcers and pyloric stenosis, the appendix was found diseased in 12 cases (33 per cent); 18 out of 40 cases operated upon for juxtapyloric or duodenal ulcers showed chronic appendicitis (45 per cent). The author also observed that about 80 per cent of his gastric ulcer patients were seized with pulmonary tuberculosis generally benign and of slow evolution.

Almost every patient presented what the author calls the "pneumogastric sign," i. e., pain on pressure at the level of the cervical pneumogastric. He infers that this is a neuritis of the vagi nerves of pulmonary origin, originating from the gastrointestinal distribution of these nerves, which causes

trophic disturbances and thence ulcers and other chronic inflammatory injuries of the intestinal tract.

The frequency of multiple lesions of the digestive tract partly explains postoperative functional failures from isolated intervention, such as appendicitis and gastro-enterostomy. As a corollary, as complete an examination as possible of the whole tract as far as it is evident is incumbent on the surgeon. W. A. BRENNAN.

Bonorino Udaondo, C.: The End-Results of Gastro-Enterostomy in Non-Complicated Stomach Ulcer (Resultados alejados de la gastroenterostomia en las ulceras no complicades del estomajo). *Rev. Asoc. méd. argent.*, Buenos Aires, 1918, xxix, 5.

The author has followed the history of 22 gastro-enterostomy cases for periods varying from fourteen months to four years. In all cases but one the operation was posterior. The situation of the ulcerous process was in 10 cases on the small curvature; in 3 cases on the pylorus and pyloric antrum; on the anterior face in 1 and on the posterior face in 2 cases. Of the 10 cases located on the small curvature, 6 were in the vicinity of the antrum, 2 in the cardiac zone, and 2 median.

Judging from the absence of all important symptoms and from the functional and radioscopic findings, 6 of these operated patients may be considered cured. The remaining cases, 72.64 per cent, show subjective symptoms analogous to those shown before operation. The time of appearance of those symptoms has varied from three months to two years; the average is from six to ten months.

In 2 cases there has been free hæmatemesis, and the stools have shown occult hæmorrhage in 13 others. The total acidity has been reduced in 43.68 per cent; increased in 18.72 per cent; and not modified in 24.96 per cent of the cases. Free hydrochloric acid has diminished in 43.68 per cent; increased in 18.72 per cent; and was not modified in 12.48 per cent of the cases. These results are in general accordance with those recently published by Wilensky and Crohn, although Smithies of the Mayo Clinic reported reduction of the acidity in 81 per cent, and increase in only 20 per cent of gastro-enterostomy cases.

Radioscopy of 13 of these patients has shown that there was a bismuth retention after six hours in 4 cases. Evacution was observed to be by both the new opening and by the pylorus, with predominance of the first. In only 2 cases the pylorus did not function. Generally an evident diminution of the peristaltic contraction has been observed.

Thus in 22 cases of gastro-enterostomy for ulcer, in 72.64 per cent there has been observed after a varying lapse of time manifestations identical with those which preceded the operation. These are not symptoms of the dyspepsia common to this class of patients, but are symptoms of active ulceration.

The study of the results has absolutely modified the author's ideas of the therapeutical value of the operation which he formerly held. He does not believe that failure to obtain the desired result is due to faulty technique. He concludes that in a high percentage of non-complicated gastric ulcers, simple gastro-enterostomy does not modify the end-results of the process. He will show in a later article that simple medical treatment gives an equal number of recoveries and improvements without exposing the patient to the danger of operation. He is therefore opposed to surgical treatment and urges safer procedures. W. A. BRENNAN.

Leavitt, E. J.: A Brief Review of the Roentgenological Pathology of the Stomach. *Long Island M. J.*, 1918, xii, 317.

The author first gives a brief review of the early studies of the stomach by means of the barium meal, and dwells at some length on the necessity of the roentgenologist's thorough familiarity with the principles of internal medicine in order that his X-ray findings may be properly interpreted. It is essential that he have full knowledge of: (1) the anatomy and physiology of the organs he is required to diagnose; (2) the appearance of the shadows of such organs on the fluoroscopic screen; (3) the pathogenesis and morbid anatomy to which such organs are subject; (4) the relation of the changes the shadows of the normal organ bear to such pathological processes, upon which to finally (5) base a diagnosis on such findings in a more complete manner than can be accomplished by any other method.

The normal type of stomach is classified under four headings: (1) the orthotonic type, characterized by equal width of the sac and descending limb; (2) the hypertonic type, characterized by the pars descendens wider than the sac, assuming the form of a steer-horn, and normally situated more or less diagonally across and high up in the abdomen; (3) the subtonic type, characterized by the descending limb narrower than the sac and normally found situated low down in a short abdomen; (4) the hypotonic type, characterized by a wide sac and a long, narrow, drawn-out pars descendens. Each of these types will be found to correspond quite definitely with the habitus of the patient.

If the type of stomach does not correspond to its habitus, then it may be regarded as abnormal, and is an indication for a thorough search along the following lines:

The hypertonic stomach, frequently an expres ion of reflex irritation, is often associated with duodenal ulcer, pyloric adhesions, pancreatic, hepatic or cæcal irritation.

The subtonic stomach occurs as a mechanical ectasia or as a gastropyloroptosis due to loss of intra-abdominal pressure, as in intestinal ptosis, pendulous abdomen, etc.

The hypotonic stomach occurs in atonic ectasia or ptosis due to distention of the stomach by weakness of the muscle fibers. It is differentiated roentgenologically from the subtonic stomach by a drawn-out pear-shaped air dome.

The atonic stomach is always associated with dilatation and is characterized by a crescentic shadow situated in the median line.

Changes in position of the stomach are most commonly due to pyloric adhesions associated with pericholecystitis or perforating duodenal ulcer, but also may be due to ecchynococcus cyst, hydronephrosis, ovarian cyst, large pancreatic tumor, etc., which can often be surmised from the direction in which the stomach is being pushed. An enlargement of the liver or spleen can be seen directly upon the plate.

Changes in the luminal contour may be due to spastic or organic changes. The spasm may present itself in the form of an incisura on the greater curvature, which may be deep enough to almost bisect the stomach, pylorospasm without distortion recognized only by retention of the opaque meal and accompanying compensatory peristalsis, diffuse distortion of the pyloric end of the stomach, and spasm of the longitudinal fibers of the lesser curvature causing an indrawing of the pylorus. Total gastrospasm may be recognized by the lack of peristalsis, indicating rigidity of the walls and pyloric patency. Organic changes manifest themselves by a constant persistent defect in the contour of the barium-filled stomach.

Peristalsis becomes pathological when it is retarded, accelerated, erratic, absent, or reversed. Peristalsis is usually absent in extensive carcinoma, syphilis, etc., and is accelerated by hyperacidity and by pyloric obstruction. Reversed peristalsis is of grave omen.

If the ordinary barium meal is retained in the stomach longer than six hours, the motility is regarded as pathological. This may be due to various causes, such as organic obstruction, hyperacidity, pylorospasm, etc.

The roentgenological estimation of gastric secretion is subject to many fallacies; nevertheless it can be roughly estimated, first, by the width of the air dome in the empty stomach or, more accurately, by the use of the sinking and floating barium-filled capsules.

The author also draws attention to the fact that many other abdominal disorders may refer symptoms to the stomach, and he urges the importance of a study of the complete gastro-intestinal tract in all cases, especially in those which present negative stomach findings.

He summarizes as follows:

1. A roentgenological diagnostician must be a physician thoroughly acquainted with the subject on hand from the standpoint of a physician and of a roentgenologist.

2. Roentgenological diagnosis is not a perfect method of diagnosis because it is still subject to fallacies.

3. Roentgenology directly discloses the following conditions of the stomach: quantity of secretion, gastric motility, mechanical ectasia, atonic ectasia, atony and dilatation, perigastric adhesions, disorders due to extragastric causes, state of tonicity, nature of peristalsis, extrinsic and intrinsic spasm, pyloric obstruction due to direct and indirect causes, penetrating ulcer, florid ulcer, carcinoma, syphilis, fibromatosis and benign tumors.

A number of tracings from the original slides, with descriptions, conclude the article. **W. A. Evans.**

Le Noir, P.: Transient and Alimentary Glycosuria After Gastro-Enterostomy for Pyloric Stricture of Ulcerous Origin (Glycosurie transitoire et épreuve de la glycosurie alimentaire chez les opérés de gastro-entérostomié pour sténose pylorique d'origine ulcéreuse). *Bull. et mém. Soc. méd. d. hôp.*, Par., 1918, xlii, 707.

Following the operation of gastro-enterostomy the functioning of the stomach and intestine is sometimes sensibly modified and no longer corresponds to normal physiological conditions. The intestinal secretions may penetrate into the stomach; and although the presence of bile in the gastric cavity may not cause inconvenience and may even be advantageous, this cannot be said for the pancreatic juice in contact with the gastric secretions.

The author has made systematic examination of the urine in patients after gastro-enterostomy. In some cases he has found sugar in the urine. The quantity was small and the glycosuria was observed to be inconstant and transitory and was only manifested during the digestive period.

He cannot make any definite statement as to the conditions which cause or favor this glycosuria. It might be an alimentary spontaneous or provoked glycosuria. Such a hypothesis would, however, be only admissible for a few of the patients observed, because in the majority the suspicion of alcohol or hepatic insufficiency may be removed.

The appearance of sugar in the urine would not be inconsistent with disturbances in the duodenal pancreatic functioning. The clinical facts reported by Zack and the experimental results found by Gaultier and others have shown that glycosuria can result from lesions of the duodenal mucosa. A very complete study of the duodenal chemistry made by Gaultier in one of the cases on which the author reports has given reasons for the belief that in the gastro-enterostomy cases there may be an alimentary glycosuria due to pancreatic duodenal insufficiency. Whatever is the cause, the existence of this spontaneous or provoked glycosuria merits attention, and future researches may throw more light upon it.

W. A. Brennan.

Hemmeter, J. C.: The Modern Treatment of Gall-Stone Disease as Affected and Controlled by Duodenal Intubation. *Med. Rec.*, 1918, xciv, 575.

The bacterium which is the cause of the gall-bladder infection cannot always be isolated from the bile, although it may be from the wall of the bladder and the center of the stone. It is not necessary to undertake puncture of the gall-bladder through the intact abdominal wall in order to endeavor to as-

certain the specific micro-organism. This can be done by duodenal intubation, often gentle massage of the gall-bladder through the abdominal walls, by setting up of the bile-evacuating mechanism by injecting HCl and albumoses into the duodenum. In case there is an obstruction of the cystic or the common gall-duct, this procedure cannot prove successful. But if any bile reaches the duodenum at all, it can be aspirated by the method of duodenal intubation first practiced by the author in 1897.

The course to pursue in aiming at a treatment of cholelithiasis that is based upon the cause would be first to ascertain the specific bacterium which is causing the infection, and thereafter to obtain a serum by inoculating animals with this special strain of organisms. The principle of non-surgical treatment of cholelithiasis is to bring about a period of quiescent latency in the disease. The employment of so-called cholagogues, especially a number that appear to be proprietary articles, is condemned. The use of olive oil, either by mouth or rectum, in large doses, has not been followed by gratifying results. It is entirely irrational to speak of a solution of gall-stones by medical means.

E. B. Freilich.

Manson, J. S.: Adenoma of the Small Intestine in an Infant, with Resulting Volvulvus. *Brit. M. J.*, 1918, ii, 432.

An eight months' infant was seen with a history of vomiting on the previous day. Cathartics and enemas brought no result. A week later fæcal discharge contained a small quantity of dark coagulated blood and some inspissated mucus. A fairly firm mass was felt in the right lumbar and umbilical regions.

The abdomen was opened by a median incision above the umbilicus and an empty plum-colored loop of bowel, twisted on itself and covered with adherent lymph, presented. The twist was undone and a small tumor was felt in the bowel which was not removed because of the child's condition.

The child died during the night and the post-mortem revealed an adenomatous polypus growth in the intestinal wall with hypertrophy of the bowel wall for about a foot next the tumor, with a narrowing of the lumen. P. W. Sweet.

Romanis, W. H. C.: The Surgical Treatment of Intussusception. *Practitioner*, Lond., 1918, ci, 152.

For some years it has been universally admitted that the treatment of intussusception should be entirely operative and that laparotomy should be done at the earliest possible moment. The results of the different operations performed in the series of 374 cases referred to by the author bear out the well known fact that if anything more than the simple procedure of opening the abdomen and reducing the invagination is required, the mortality rises. Irreducible or gangrenous intussusceptions are fortunately comparatively rare, only 40 cases of the above series failing to be reduced.

In the case of a reducible intussusception, surgical procedure varies somewhat. Most surgeons are content to open the abdomen, reduce the invagination, and close the abdomen as quickly as possible. Other operators undertake some further prodecure calculated to prevent the recurrence of the condition. True recurrence of an intussusception does not appear to be sufficiently common to justify any additional preventive procedures which at all increase the risk of the operation or prolong its duration.

In the case of irreducible and gangrenous intussusception, resection in children of five years or over has a not unduly high mortality and should therefore be undertaken in a child of this age and be followed, if the condition of the patient permits it, by union of the bowel ends. If however, an irreducible intussusception occurs in a younger child of one or two years of age, the outlook is altogether different, for recovery after resection is practically unknown in a child of this age. A fair number of instances of recovery after sloughing of an intussusception is known, and when encountering an irreducible invagination on laparotomy in a child under two years old, slender though its chance of unaided recovery by sloughing is, it is probably greater than the infinitesimally small chance that a resection will save its life. A third alternative in an irreducible case is the performance of a lateral anastomosis above and below the lesion, but this is seldom done.

Three great maxims should be kept continually in mind in considering the operative technique:

1. The duration of the operation, and especially the time during which the peritoneal cavity is kept open, must be curtailed in every possible way that is consistent with careful and accurate work and delicate manipulation.

2. The duration of general anæsthesia, if employed, should also be diminished as far as possible; if available, spinal anæsthesia should be employed in its stead.

3. Every possible means must be taken to combat shock, before, during and after the operation.

E. B. Freilich.

Cannaday, J. E.: Long Resections of the Small Bowel. *Tr. South. Surg. Ass.*, St. Augustine, 1917, December.

The length of the small bowel varies greatly with the individual, also in accordance with the character of the food supply. It varies from fifteen feet and six inches to thirty-one feet and ten inches, usually being slightly longer in the female. Races dependent largely on a coarse vegetable food supply have longer intestines than those who subsist on a more concentrated dietary. Extensive clinical laboratory experiments made under the direction of Senn and Kukula show that at least one-half of the small bowel can be removed and the individual survive and maintain a fair degree of bodily health

and strength. After such operations the wastage of fats and albumins is exceedingly large, and the diet has to be very liberal in that character of food.

In the case reported, ten feet of the small bowel, together with the cæcum and six inches of the ascending colon, were resected. A lateral anastomosis of the ileum with the transverse colon was made. This extensive resection was done for the relief of multiple tubercular strictures of the small bowel. Following this operation acute obstruction developed. The abdomen was re-opened for the correction of this. An adherent kink of bowel was liberated, but symptoms of obstruction reappeared twenty-four hours later. Then an enterostomy was done with the complete relief of the obstructive symptoms, and subsequent operative recovery. Several weeks later the patient died from an acute pulmonary tuberculosis. A postmortem was done and it was found that the original length of the bowel was abnormally short. Measurements of the remaining amount of bowel showed only four feet and nine inches of the large bowel, and five feet seven inches of the small bowel, measuring from the anastomosis up to the duodenojejunal junction.

Bunch, G. H.: The Diagnosis of Appendicitis Complicating Pregnancy. *J. So. Car. M. Ass.*, 1918, xiv, 250.

Dull pain followed by nausea, right-sided rigidity with tenderness about McBurney's point, fever with leucocytosis, mark acute appendicitis in the pregnant woman as in any other patient. They are often not given their proper significance in the parturient because the profession is prone to attribute the patient's complaints and symptoms to the pregnancy and without investigation to apathetically wait for nature at delivery to relieve her of her troubles.

Expectant treatment without thorough examination and accurate diagnosis has no place in pregnancy. As the intestines are pushed upward and to the sides by the enlarging womb, the appendix lies nearer the right kidney and pyelitis may so closely simulate acute appendicitis that without miscropical examination of the urine, differentiation may be impossible. The urine in pyelitis is loaded with pus and no matter how urgent the symptoms, no pregnant woman should be operated upon without a microscopical examination of a catheterized specimen. Voided specimens are contaminated and worthless.

In biliary colic there is tenderness over the gallbladder. Colic from ureteral stone is intense. Blood is usually found in the urine. Pus may be found. The X-ray is of help in the diagnosis. The differentiation between acute appendicitis complicating early pregnancy and extra-uterine pregnancy is not important, for both are abdominal emergencies capable of being treated through the same incision. In tubal rupture the shock is so great that the patient may fall of faint. There are the signs of internal hæmorrhage; fever and leucocytosis come later. In pregnancy early diagnosis and early operation are imperative. Owing to the lowered resistance of the patient and to the pressure of the womb on the appendix causing disturbance of its blood supply, the appendix is more apt to become infected and rupture in pregnancy. After perforation localization is difficult and diffuse peritonitis often results because the intestines and omentum are more movable than the cæcum and are lifted from it by the womb so that they are not available in walling off the infection. Operation by a high McBurney muscle split incision is neither difficult nor dangerous in clean cases. With care and gentleness at operation few cases miscarry.

The author has operated upon and removed the ruptured appendix in three cases complicating pregnancy. They were young primiparæ between the fourth and fifth months of gestation. Case 1 had diffuse peritonitis and died of sepsis on the sixth day. Case 2 had a large abscess to the right of the navel. Convalescence was trying. Nausea was persistent. Septic fever lasted for weeks. Emptying the womb was urged but refused by the patient. At term she gave birth to an eleven pound boy who is living and well. Since delivery the discharge has stopped but there remains a postoperative hernia. Case 3 was an unmarried girl with a venereal history. She had diffuse peritonitis and miscarried on the fourth day. After twelve weeks in bed she is well. During convalescence she had a pelvic abscess necessitating median laparotomy. She had phlebitis in the femoral and popliteal veins on the left and then on the right side. She had pyelitis on the right side and then on the left.

Bower, J. O.: Appendicitis in Children. *N. Y. M. J.*, 1918, cviii, 501.

Two years ago, on reviewing the case records of patients operated upon for appendicitis under fifteen years of age at the Samaritan Hospital, Philadelphia, it was found that the percentage of clean cases (those in which it was not necessary to insert a drain) was less than ten per cent. At least ninety per cent had peritonitis, either local or general, and the mortality was four times greater than the mortality in a corresponding number of cases among adult patients. In a similar number of operations on adults, the mortality was less than five-tenths per cent. These facts show the importance of early diagnosis.

Immediate operation is generally accepted as being indicated in practically all types of appendiceal inflammation, the exceptions being: (1) early perforations with widespread peritonitis due to the streptococcus; (2) cases of general peritonitis of several days' duration where an operation might turn the tide against a favorable outcome. In these cases many institute the Ochsner treatment with excellent results; it is not easily carried out in children.

At the Samaritan Hospital, however, these cases do better if drainage is instituted. This may be accomplished with a minimum amount of shock to the patient by using either local or intraspinal anæsthesia. The advantages gained by the use of the

latter are: (1) the patient's emunctories are not interfered with, as they unquestionably would be if ether were administered; (2) relaxation of the abdominal muscles permits the insertion of a drain with the least possible amount of manipulation of the abdominal contents; (3) paralysis of the bowel and sphincter permits evacuation of the contents of the lower bowel. EDWARD L. CORNELL.

LIVER, PANCREAS, AND SPLEEN

Mann, F. C., and Foster, J. P.: The Secretory Pressure of the Liver, with Special Reference to the Presence or Absence of a Gall-Bladder. *Am. J. Physiol.*, 1918, xlvii, 278.

Previous work by Judd and Mann had demonstrated that the extrahepatic ducts dilate after the removal of the gall-bladder. This result seemed to be due to interaction of the pressure exerted by the liver and the sphincter at the duodenal end of the common bile-duct. It seemed desirable to know whether the secretory pressure of the liver varied in species of animals with a gall-bladder from those without one. Previous work on the secretory pressure of the liver is reviewed. The pressure was measured in the rabbit, guinea-pig, striped gopher, and goat, species that possess a gall-bladder, and in the white rat and pocket gopher, species that do not possess a gall-bladder.

From the results of the experiment the following conclusions were made:

1. The secretory pressure of the liver was found to vary considerably in the various species of animals. The reason for this is not clear; there may be many causes; however, the presence or absence of the gall-bladder does not seem to be one of them.

2. The secretory pressure of the liver appears to be somewhat greater in unanæsthetized animals than in those under an anæsthetic, but since the data obtained on anæsthetized animals were only comparative, the conclusion that the presence or absence of the gall-bladder bears no relation to the secretory pressure of the liver is justified.

Horsley, J. S.: Reconstruction of the Common Bile-Duct. *J. Am. M. Ass.*, 1918, lxxi, 1188.

According to Horsley, defects in the common bile-duct may result from errors in operative technique, from strictures following ulceration or trauma, or from neoplasms. Since excision of the gall-bladder has become a frequent practice, the possibilities of injuring the bile-duct, particularly in inexperienced hands, have become numerous.

Many methods of treating defects in the common bile-duct have been devised. The author has introduced a method of transplantation of an everted vein. Theoretically, the advantages are that the vein when turned inside out would have the endothelial coat outside, and this would become adherent to the endothelium of the peritoneum and the surrounding raw surface and the nutrition of the vein be thereby readily established. The vein offers a thin, well organized tube which should require a minimum amount of nutrition as compared with a thick tube of fascia, and if the epithelium from the duct and duodenum would grow in from the ends of the transplanted vein, a permanent tube of definitely organized tissue would probably result. However, these theories did not bear out in the experimental work.

Sixteen experiments were performed on dogs, in which the following technique was developed.

The external jugular vein was used. A ligature was placed at the lower portion of it, and after the vein had been dissected clean of fat, another ligature was placed at the upper end. The length of segment removed was double the length of the duct to be reconstructed. After removal a mosquito hæmostat was inserted in the segment of vein at one end, and grasped a bite at the other end. Then by pulling on the forceps the vein was turned inside out. It was kept moist with salt solution until ready for use. A suture of small tanned catgut was inserted at one end after the manner of a purse-string suture and tied so as not to constrict the caliber of the vein. Opposite the knot in the catgut a silk ligature was placed and left untied.

The common bile-duct was dissected free and a serrefine whose spring had been weakened as for blood-vessel work was placed on the upper part of the duct. The peritoneal covering of the duct was preserved as much as possible. A ligature was placed on the duct close to the duodenum, and the portion between the ligature and the serrefine excised. A needle threaded with rather stout silk doubled transfixed the stump of the common duct. This suture was made long enough for the four strands to traverse the segment of vein. It was not tied on the common duct.

Mosquito forceps were then introduced through the segment of vein to catch the four strands of the tractor suture, drawing them through. Two of the strands were threaded in a large needle, passed through a short piece of small rubber tube, and tied firmly to the other two strands. One end of the purse-string suture was then threaded in a small curved needle and inserted in the duct about one-third of an inch from its end. It was tied snugly while pulling up the vein and pulling down the tractor suture, so that the stump of the duct was invaginated into the vein. Then the end of the silk ligature that was previously inserted into the vein was inserted into the duct at a point opposite to the insertion of the catgut. The silk was left long in order to bring up the omentum later on. In this manner the vein was fixed to the stump of the common duct which was vaginated into the vein.

A transverse or oblique incision was then made on the duodenum, going down to the mucous membrane but not through it. At the point of incision farthest from the common duct, the mucous membrane was punctured. A silk or linen suture was passed through the edge of this puncture and

caught the vein in at least two places. This suture was inserted in the form of a mattress stitch. Then the tractor suture on the common duct, together with the piece of rubber tube, was pushed through the hole in the mucous membrane. The end of the silk suture that held the vein in position at the upper stump was then threaded on a needle, and a piece of omentum brought up and held around the transplanted vein by means of this suture.

Of the sixteen experiments, in the first and third dog there was no provision made for drainage of bile through the transplanted vein. Both died with leakage at the junction of the duct and vein, the vein having become a solid cord. Six other dogs either died or were about to die when killed within from seven to forty days after operation. In each instance there was occlusion of the transplanted vein. One died two days after operation, the abdominal wound having opened. Six were in fairly good condition when killed from nineteen to forty-five days after operation. One dog was killed under anæsthetic three and one-half months after operation. It had been well up to three weeks before being killed. It then began to look bad and became emaciated and jaundiced. Postmortem showed the reconstructed duct occluded and much shortened and the common and hepatic ducts enormously dilated.

From the experiments the author concluded that while it is possible to reconstruct the duct by using an everted vein, the final result is unsatisfactory. In man the immediate danger of leakage at the point of junction could be avoided by drainage.

Microscopic sections of the transplanted vein showed a marked inflammatory round cell infiltration of the adventitia, while the outer layer had very little infiltration.

The author calls attention to the fact that there seems to be what might be called a biologic law of the immunity of tissue near an irritating discharge to the effects of that discharge. It should be borne in mind when repairing defects of the common duct that subsequent contraction will surely occur if non-immune tissues foreign to this region are used. The most satisfactory reconstruction occurs when the stump of the common or hepatic duct is sutured to the mobilized mucosa and submucosa of the duodenum. In this way epithelial and subepithelial layers of tissue that are accustomed to the biliary discharges are used and no more contraction should occur than would take place after suturing a wound in the intestine. G. W. HOCHREIN.

Deaver, J. B.: Acute Pancreatitis. *Ann. Surg.*, Phila., 1918, lxviii, 281.

The author believes it is no exaggeration to say that acute pancreatitis is more often unrecognized than it is diagnosed before operation, in the first place, because it is comparatively infrequent and there is no one sign or symptom that can be said to be pathognomonic of the disorder; generally the desperate condition of the patient makes operation imperative without the formality of a definite diagnosis. Also acute pancreatitis is frequently associated with cholecystitis, perforating cholecystitis, perforating gastric or duodenal ulcer, appendicitis, etc.

As to predisposing factors, obesity and alcoholism are sometimes mentioned. Age and sex do not seem to play a part in this respect; in the author's series of 15 cases, 11 were females.

The author believes that a sudden acute abdominal seizure, pain overwhelming, in an apparently healthy, usually obese individual, accompanied by incessant vomiting, upper abdominal distention, a transverse resistance not easily elicited, weak pulse, subnormal temperature, collapse, and sometimes cyanosis, should suggest acute pancreatitis. The previous history will usually reveal at least one, and usually more, attacks of severe epigastric pain which have been regarded as gall-stone colic and have been treated as such. Not infrequently the first attack of this kind occurs during or soon after a pregnancy.

The surgery of the pancreas must be directed to providing an escape for the highly toxic pancreatic fluid; in other words, the pancreas must be drained.

Deaver is not always in favor of operating in a state of profound shock; he deems it wise to wait for a short time in order to give the patient a chance to rally, and to wait for the peritoneal inflammation to localize. In the interim, the Murphy-Fowler-Ochsner method of treatment is instituted.

Early operation is desirable. The presence of blood and fluid exudate in the pancreas requires incision and packing with gauze. Too free and indiscriminate an incision presents the danger of free hæmorrhage, difficult to control. Scarification of the peritoneum over the gland, should, however, be sufficient to allow gauze drainage to be brought into direct contact with the surface. A few blunt punctures of the pancreas are of service in providing free exit for the contained blood, lymph, and the obstructed secretion.

Two routes may be chosen, the transperitoneal or the extraperitoneal through a loin incision.

One of the most troublesome postoperative effects of drainage in acute pancreatitis is the formation of sinuses. Irritation of the skin over which the discharge flows may be avoided by protecting the skin with a bland ointment. In order to limit the activity of the pancreas, a strict anti-diabetic diet is found useful in promoting healing.

In conclusion, the author reports two recent histories which serve to illustrate some of the points contained in his discussion. E. C. ROBITSHEK.

Sherren, J.: A Note on the Surgical Treatment of Certain Diseases by Splenectomy. *Ann. Surg.*, Phila., 1918, lxviii, 379.

The author has carried out fourteen splenectomies for disease, with one death. Nine of these were for splenic anæmia and Banti's disease; one, for Gaucher's splenomegaly; one, for hydatid cyst of the spleen, and two for splenomegalic jaundice.

In three cases of the first group hæmorrhages had been the primary symptom. All of these cases were operated upon more than two years ago and not one has had a hæmorrhage since. In all the other cases the changes in the blood picture were equally striking, although complete recovery may not take place in the old cases.

The author in conclusion, therefore, points out and emphasizes his conviction that all cases of splenic anæmia should be operated upon early. When cirrhosis of the liver has supervened, although the patient may be restored to apparent health, fatal hæmatemesis may suddenly occur.

GATEWOOD.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS, CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Boorstein, S. W.: Bilateral Congenital Radio-Ulnar Synostosis. *Am. J. Surg.*, 1918, xxxii, 220.

Boorstein reports two cases of a comparatively rare surgical condition, namely, bilateral congenital radio-ulnar synostosis. He quotes the early work of Feidt, Wilkie, and Thomas on this subject.

Two types of the lesion are met with, but no sharp line of differentiation between them can be drawn. In the first class the radio-ulnar fusion is associated with congenital dislocation of the head of the radius. The head of the radius is more or less normally developed and the point of fusion is below the head. The other type, which is considered the primary or true radio-ulnar synostosis, is that in which the upper end of the radius is not fully developed but is fused to the ulna. The fusion in this type includes the head and extends several centimeters down the shaft. The first type is more frequently unilateral, while the second is bilateral.

The author's first case occurred in a Russian laborer, aged forty-one. The man knew from early childhood that there was some deformity of the forearms, but experienced no trouble therefrom and was able to work as well as any other laborer of his age. Both forearms were kept midway between pronation and supination. He was able to pronate freely, but could not supinate. When he attempted to do so, he had to rotate the shoulder and wrist. Flexion of the elbow-joint was normal on the left side and limited on the right side, which was probably due to a dislocation of the head of the radius. The X-ray showed a distinct osseous union for 5 cm. in the upper ends of both ulnæ and radii. The radius was curved outward a great deal, producing a wider interosseous space between the bones at the lower end than at normal joints. No attempt was made to correct the deformity.

The second patient was also a Russian, aged thirty-four. There were fourteen children in the family, seven of whom were living. All had one club finger. The four male members had a peculiarity of having no hair over the cheek bones. Both humeri of the patient were very short. The elbow-joints were in a position of cubitus valgus, the forearms being at an angle of 160° with the humeri. Both forearms were kept in marked pronation. He was unable to supinate them. If asked to perform some function requiring that motion, he rotated the wrists and shoulders. The forearms were wider than normal. Flexion and extension were free. The left index finger was clubbed. X-ray showed complete osseous union between radius and ulna at the upper articulation for a distance of 9 cm. The radii were curved a great deal to allow supination. The heads of the radii were not dislocated.

The patient suffered practically no inconvenience from this deformity. He was able to lift and carry a load of 75 pounds. Because of the family tendency to deformity, as proven by the club finger and absence of hair over the buccinator, this deformity is classed with those due to changes in the plasmodial cells.

The etiology of this deformity is practically unknown. The author's conclusions are:

1. Radio-ulnar synostosis is not so rare as claimed by previous observers. These patients simply do not consult physicians and so pass unnoticed.
2. Patients with such deformity can perform even delicate motions.
3. A hereditary cause can be attributed in some instances, as proven by the second patient.

G. W. HOCHREIN.

Dumas, J., and Malartic, H.: Osteitis of War (Note sur les ostéites de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 1424.

The authors give the results obtained after twelve months in a special hospital for the treatment of non-tuberculous bone suppurations. The patients had generally suffered fractures and had been treated and operated upon in various other hospitals, some of them several times. The limb generally showed a large osteitic callus with one or more fistulæ, and the soft parts had undergone more or less complete fibrous transformation.

The general treatment adopted consisted in widely opening up the osteitic area and drainage. Postoperatively various antiseptics, obturators, muscle and cartilage grafts were used. Some wounds were partly primarily sutured; others totally secondarily sutured. Various other auxiliary treatments were employed. The most constant and surest results were obtained from open treatment, allowing cicatrization to be spontaneously effected.

The important thing after operation is to obtain disinfection of the operated area rapidly and thus obviate recurrence. The employment of hypochlor-

ite solutions, prepared according to the technique of Dakin and Daufresne have unquestionably given the authors the best results, with elimination of pus, satisfactory appearance of the wound, repairs, and regular healing.

The dressing is removed each day. It should always be done by the same person who will thus be enabled to judge of its progress from the state of the wound.

The authors treated 628 cases of fistula. These cases on the average had been in hospital for fifteen months previous to their arrival in this special service and had on the average been operated upon four or five times. The tibia and femur were involved in about half the total number of cases. Sacrum cases, of which there were 16, were the most difficult to cure. Among the 628 cases there was but 1 death; this patient died from acute uræmia before operation.

While secondary suture has given some striking successes, on the other hand it often retarded recovery, and this may in general be attributed to the bad condition of the sutured tissues.

Of the operated cases, 245 have been followed up; 148 replied. Of these 142 were quite recovered, but in 6 the wound or fistula had reopened.

The results of this special surgical service for rebellious fistula and bone suppuration show that over 90 per cent of such cases can be cured by sufficient and proper treatment. W. A. BRENNAN.

Hepburn, H. H.: Gunshot Wounds of the Knee-Joint as Seen at a Base Hospital. *Brit. M. J.*, 1918, ii, 338.

The author summarizes fifty consecutive cases of gunshot wounds of the knee-joint in all of which the synovial membrane was penetrated. It is a rare occurrence to find suppuration in a knee-joint when the notes from the casualty clearing station say, "Wound excised, not penetrating."

Of the 50 cases under consideration, 25 were complicated by demonstrable bony lesion and 25 were not. The synovial cavity is stated to have been washed out and closed in 27 cases, 14 cases with fracture and 13 without fracture. Saline solution is stated to have been employed in 6 cases, eusol in 6 and ether in 2. The remainder were not specified. "Bipp" was introduced into the joint in two cases and flavine in one; all three did well. The foreign bodies were not found or not looked for in 9 cases at the casualty clearing station. Five of these required removal at the base, one was left embedded in the femur, the other three being very small and the joints quiescent. It was found necessary to re-open the knee-joint in 19 out of the 50 cases; 12 being with fracture and 7 without fracture. Subsequent amputation was necessary in 6 of the 19 cases, 4 with fracture and 2 without. Two patients died from septicæmia. In one successful case without fracture both knee-joints were penetrated. All cases requiring more than dry dressing were treated with eusol.

Since the fate of a wounded joint is largely settled at the casualty clearing station, the treatment at the base hospital is largely expectant. Usually the third day after the journey from the casualty clearing station is the end of the critical period, provided the man has been kept at that station for a week after operation. The general principles in treatment are evacuation of pus and all foreign material, thorough cleansing with a minimum of traumatism, the relative abolition of drainage tubes, immobilization, and preservation of the best possible functional limb.

Repeated aspiration with or without lavage has not given results which warrant the delay in more complete drainage.

Suppuration occurs much more frequently in the anterior than the posterior synovial sac. The synovial membrane appears to be more capable of dealing with micro-organisms when the sac is completely collapsed. When pus forms in the popliteal bursa, thorough drainage is difficult to obtain, the tendency being for pus to track downward into the leg on the posterior interosseous membrane, as well as upward along the femur, with a bad prognosis. Of the 19 cases drained by lateral incision, 7 developed an abscess in the posterior pouches. Six of these were treated by incision in the popliteal space, and one by incision in front of the tendon of the adductor magnus; four of these required subsequent amputation and one died.

The author describes his joint drainage operation in which he uses Carrel tubes. After operation he places the limb in a Thomas splint and gives two-hourly injections of one-half ounce of eusol into each Carrel tube and one thorough daily irrigation for three days. On the third day the tubes are removed and replaced by two tubes into the wound but not within the synovial sac and on the fourth day the last through-and-through irrigation is done. From that time on only superficial tubes and dressings are applied, and the incisions in the synovial sac are encouraged to close. They are usually sealed up with lymph by the fifth or sixth day.

Movement of the joint must not be encouraged too early on account of the danger of stirring up and liberating infection. The author usually starts passive movement when the synovial sac has been closed and the temperature under 99° F. for ten days. V. C. HUNT.

Langworthy, M.: Restoration of Function to Stiff Fingers. *Am. J. Orthop. Surg.*, 1918, xvi, 365.

Immobilization necessary in the treatment of injuries to soft tissues or in fractures of the wrist or hand may result many times in stiff fingers. Fingers stiff in extension have been difficult to treat. Graddual flexion is better than forcible flexion under anæsthesia.

The author's method consists of a plaster-of-Paris splint closely molded to the dorsal surface of the forearm and hand and reaching an inch longer than the fingers. The cast has incorporated several

thin pieces of webbing extending longitudinally the entire length of the cast. The cast is cut transversely slightly in front of each metacarpal phalangeal, and each phalangeal joint, the cut extending down to the webbing which acts as a hinge for each section of the splint.

The splint is thoroughly dried, preferably by baking in an oven. Flexion and traction is obtained by adhesive strips extending from the tip of the finger splint, being attached to the anterior surface of the wrist strap.

The splint is fastened by strips of adhesive plaster extending around the wrist and around the palm. Flexion is increased each day; the fingers are extended for a few minutes before each application of flexion force. Two weeks is the usual time for cure.

J. J. KURLANDER.

Meyerding, W. H.: Cystic and Fibrocystic Disease of the Long Bones. *Am. J. Orthop. Surg.*, 1918, xvi, 367.

The author gives the following case histories: A young woman twenty-one years old sustained a fracture of the right radius fifteen years previously, and no further trouble was noticed until three years later, when a tumor formation was recognized in the same region. A specimen was removed and diagnosed as sarcoma; amputation was advised but refused. Pain subsided and improvement was shown until several years later, at which time the tumor was excised by removal of the upper three inches of the right radius. A diagnosis of giant cell sarcoma was made, and the arm recovered perfect function.

Five years later a tumor developed in the right frontal region and about four years later a small mass appeared in the right tibia. There was no pain. The frontal tumor felt cystic on pressure. There was slight enlargement in the right tibia and femur. The right ovary was enlarged. Tonsils were large and chronically inflamed. Urinalysis and Wassermann test were negative. The latest roentgenogram shows osteitis fibrosa cystica in the right tibia, femur, and humerus. The chest shows healed tuberculosis of the upper right lobe.

The flat internal surface of the tibia was exposed and removed, disclosing a fibrocystic degeneration which could be removed by a gouge and curette. The walls were then crushed in, the wound closed without drainage, and a large pressure pad bandaged firmly over the leg. The following cases show family disposition toward the disease. The father fractured the right fibula by a horse kick. Two years later the right femur was fractured in a runaway but healed in six weeks. Two years later the left femur was fractured in tripping. His left leg was amputated because of poor union. A small sinus in the stump remains. His brother at the age of eleven fell, fracturing the right femur. Seventeen months later the left femur was fractured in falling from a horse. Several years later he fell from a bicycle, fracturing the left femur. Later there was bending at the site of fracture. Two years later the right forearm was broken; poor union followed. Another brother had five fractures in about three years. In one family there were twenty-three fractures. The mother and three sisters were healthy.

The following case is of interest. A man twenty-nine years old sustained a fracture of the right humerus at the age of ten. It healed and gave no further trouble. At fourteen the femur was fractured. At seventeen the right femur was fractured, which was treated with a cast, and walking attemped at the fifth week disclosed no union. Malposition persisted ever since, requiring the use of crutches. Examination shows five-sixths of an inch of shortening, together with pseudarthrosis and considerable angulation. Roentgenogram shows a fibrocystic degeneration of the long bone, involving the medulla mostly. At operation, the pseudarthrosis was cut through, releasing fluid, a piece of bone from the upper fragment was removed and a Steinman peg driven through the os calcis, and extension applied. Five weeks later a bone transplant from the tibia was implanted by the intramedullary method, and a Thomas extension splint applied. Healing was by first intention. After three months there was firm union and good function. There are several other case reports of similar nature.

J. J. KURLANDER.

Morgan, J D.: Spur-Like Formations of Bone Following Amputation. *Arch. Radiol. & Electrotherap.*, 1918, xxiii, 154.

The article is based on the author's study of over 250 cases of amputation stumps by the radiographic method, the studies having been made at the Granville Canadian Special Hospital at Ramsgate and No. 15 Canadian General Hospital at Taplow. It describes the X-ray picture of a healthy amputation stump showing the bone rounded off clean, surrounded by a fairly uniform shadow of the soft parts. Some bone atrophy may have occurred or a small amount of periosteal thickening be present.

The majority of cases studied by the author showed irregularities in the end of the stump due to new bone formation, this varying from a small spicule to a relatively large "wing" of bone. As a rule, the new bone projected in an upward direction. They were frequently associated with pain and discomfort and also were responsible for the persistence of discharging sinuses. In many cases it was necessary to have a re-amputation done in order to obtain relief from the symptoms.

A complete study of the literature was made, and the author comments on the paucity of references to spur formations. The importance of the question of spur formations at the present time is explained by the changed conditions occasioned by the war, since (1) there has never before been such a series of amputation stumps for observation; (2) never before have stumps been so systematically X-rayed as during the present war; (3) owing to the tremendous demand for medical officers occasioned by the

war, many amputations have had to be done by men who have lacked experience; (4) the wounds are almost universally in a septic condition; (5) many of the patients have to travel long distances after operation before arriving at a base hospital, during which journey great difficulties are experienced in the renewal of the dressings, even if, indeed, it is possible at all. On account of these last four points, it is hardly fair to compare pre-war amputations with those after war wounds.

The practical importance of methods to prevent the formation of these spurs is discussed, the author mentioning the Bier method, or the osteoplastic flap, the subperiosteal method, which is a modified form of the Bier technique, and the aperiosteal method. Steiger's observations show that satisfactory results can be obtained by any of the three methods, provided: (1) that the operation is properly performed; (2) that primary union occurs; and (3) that the stump is at an early stage accustomed to bear weight. W. A. EVANS.

Stewart, J. P.: A Clinical Lecture on Ischæmic Myositis. *Brit. M. J.*, 1918, ii, 151.

Certain injuries which in pre-war days were uncommon have become relatively more frequent since the present war. Among them is ischæmic myositis.

This is an affection of a muscle or part of a muscle resulting from local limitation of its blood supply. It is not due to total cutting off of blood, but the muscle fibers suddenly deprived of an adequate circulation, undergo coagulation-necrosis. In the early stage œdematous swelling occurs in and around the affected muscles. Unless the blood supply is promptly restored, coagulation-necrosis occurs, which is irreparable. Later the œdematous effusion becomes absorbed, and the coagulated muscle fibers become replaced by fibrous tissue which rapidly contracts. Thus the affected muscles undergo shortening, become firm and doughy, until at last they are hard and board-like. The bulk of the muscle is only slightly diminished.

In peace the commonest cause of ischæmic myositis is the too tight application of splints or bandages. In war the commonest cause is obstruction of the main artery of the limb by ligature. Least frequent are the cases due to spontaneous obstruction of the main artery from embolism or thrombosis.

In ischæmic myositis from tight bandaging the fibrous sclerosis is usually not a diffuse but a patchy affair, occurring at the areas of maximal constriction by splint or bandage. Immediately following the application of the splints and bandages there is a premonitory stage of swelling of the distal parts, with coldness and cyanosis. There is also acute pain in the limb. The œdema and cyanosis subside in a few days, but in the case of the forearm the fingers become drawn up. After days or weeks when the splints are removed, it is seen that the fingers and wrist are stiffly flexed from shrinking of the flexor muscles. Active movements are diminished or lost. The electrical reactions of the affected muscles in this variety may remain normal, and sensory changes are usually absent, but not always.

In war wounds it is sometimes found necessary to tie large arteries in order to check primary or secondary hæmorrhage, or to arrest the growth of a traumatic aneurism. In some of these cases ischæmic myositis supervenes. This variety has several clinical differences from the group due to tight bandaging. Instead of having patches or zones of coagulation-necrosis, alternating with healthy zones in the affected muscles, there are whole muscles undergoing diffuse coagulation-necrosis. The affected muscles come to have a curious hard, board-like consistency. The electrical excitability is often completely lost, and well marked anæsthesia of the periphery of the limb is the rule rather than the exception, the sensory loss extending up along its outer border, but not in the territory of special nerve areas.

Rarest of all are the cases of ischæmic myositis following spontaneous thrombosis of a main arterial trunk. In this variety there is no direct compression of the affected muscle, nor is the artery directly injured either by trauma or by ligation. It undergoes spontaneous thrombosis as a result of extension of some inflammatory process, usually in the peri-arterial tissues. Arterial thrombosis may also follow an embolus, especially a septic embolus from the right side of the heart, but such patients rarely survive to show ischæmic myositis.

Various ingenious operations have been devised to remedy the deformity of that variety of ischæmic myositis which results from tight bandaging and splints. The disadvantages of artificial lengthening of the flexor tendons are the extensive dissections and the prolonged after-treatment of the wound. A simpler operation is one which shortens the bones of the limb by excising an inch or more of bone, but by so doing there is the formation of still more scar tissue in an already sclerosed limb.

It is better to attack this class of case, as recommended by Robert Jones, by careful and systematic stretching of the shortened tissues. In the case of the forearm the wrist is flexed by an assistant, thereby allowing the fingers to extend. In this position small metal finger splints are fixed to each digit by adhesive strapping. Over these digital splints, either at the first sitting or a day or two later, is fixed a flat palmar splint, so as to keep the phalanges and metacarpals in line. Next, at intervals of two or three days, the wrist is gradually extended, a few degrees at a time, until at last the wrist and hand are in a position of extreme dorsal flexion. Massage of the forearm muscles, hot applications, and whirlpool baths will aid in softening and stretching the affected muscles. By such means a considerable degree of recovery can generally be obtained, even in severe and long standing cases, although the best results are to be looked for only in the milder and more recent cases. V. C. HUNT.

Fairweather, S. D.: Boot Heels as a Cause of Flat-Foot, Soldier's Heart, and Myalgia. *Brit. M. J.*, 1918, ii, 313.

In a normal barefooted man the balance of the body is so perfect that practically no effort is required to keep erect. The weight rests on the heels and outer sides of the feet, not on the arch or inner sides.

If the heels are raised from the ground by boot heels even a quarter of an inch thicker than the soles, the outer side of the foot is removed from the ground and the weight falls on the arch. The center of gravity is also thrown forward and in a man of five feet seven inches the head is thrown nine inches off the vertical by a heel three-quarters of an inch high. To remedy this and to prevent falling forward, the back muscles and the extensors of the thigh and foot come into action. Thus, when an ordinary boot is used, even with a low heel, three influences tend to flatten the arch:

1. The weight of the body rests on the arch, instead of on the heel and the outer side of the foot.

2. The peroneous longus and brevis pull the arch down.

3. The tibialis anticus is out of action, and no longer supports the arch.

The muscles concerned in preserving the erect position are in continuous contraction and get spastic or muscle bound and the calf and back muscles are contantly most affected in myalgia. In some cases the strain on the peroneal muscles gives rise to painful spasm. In a flat-footed person, with ordinary boots the peroneal muscles pull on the flattened arch, tending to produce a downward convexity, and causing pain by pulling the flattened arch against the sole of the boot. With heelless boots the peronei are no longer in continual contraction, and as the weight is no longer on the arch, the strain is removed from the plantar muscles and ligaments, and the arch gets a chance to recover.

A soldier of five feet seven inches weighing 154 pounds and wearing a heel three-fourths of an inch thicker than the sole has to exert strength enough to be constantly lifting 56 pounds from the ground in trying to retain his balance. In a man loaded with 60 pound equipment this means that he has to support 116 pounds, nearly doubling the weight he is supposed to carry. This is doubtless one factor in the etiology of soldier's heart, as every heart, even if healthy, is not equal to this strain.

A woman five feet six inches with an arch six inches wide, and wearing a heel two inches high is thrown two feet off the perpendicular.

Sprained ankles, the stoop of old age, asthma, varicose veins, weak back, and spinal curvature may also be partly due to the effect of heels.

A rational boot should have the soles and heels of the same thickness. Under the arch of the foot the sole should be curved with a convexity upward, but not so convex as to cause pressure on the sole. The inner edge of the boot should be straight. The front part of the sole should not be curved up but should be flat. In hopeless cases of flat-foot a boot with no heel will at least be more comfortable than the present-day boot. V. C. HUNT.

FRACTURES AND DISLOCATIONS

Chavasse, F. B.: A Method for the Immediate Treatment of Fracture of the Femur on the Battlefield at the Site of the Casualty. *Brit. M. J.*, 1918, ii, 373.

This method is not a rival of the far more satisfactory Thomas splint, but one to be used at the site of the casualty. The principle of the method is the application of very powerful extension followed by fixation in the extended position. A stretcher and two slings are required.

The following are the steps of the procedure:

1. Expose and dress the wound.

2. Adjust the loop of one sling to its maximum size and slip it over the foot and up to the groin on the injured side.

3. Tie the knees and ankles together with three tailed bandages or any makeshift.

4. Place on the opened stretcher something rolled up for a pillow where the knees will be.

5. Place the patient on the stretcher so that his heels project an inch or two beyond the edge of the canvas.

6. Use the other sling to secure the feet firmly to the end of the stretcher. Wrap it so as to avoid torsion of the feet.

7. Gently raise the stretcher almost to perpendicular, so the patient is hanging by his feet. Wait for the muscles to relax, then extend by pulling the shoulders down.

8. Adjust the first sling so the loop is well behind the buttock, and the grip plate of the loop is almost on the surface of the stretcher, and after very strong extension fasten the sling securely. (This position of the grip plate tends to correct the flexion abduction and external rotation of the upper fragment.)

9. Level the stretcher. Tie a bandage around the pelvis and stretcher. Lay a rifle (bolt removed) or other splint along outside the limb and tie in position. P. W. SWEET.

Henderson, M. S.: Mechanical Derangement of the Knee-Joint. *J.-Lancet*, 1918, xxxviii, 523.

In this paper the principal conditions discussed are: (1) displaced semilunar cartilages; and (2) osteocartilaginous bodies of the knee-joint. The anatomical basis for the frequency of displacement of the internal cartilage is found in the intimate association between the inner border of this cartilage and the strong fibers of the internal lateral ligament and capsule to which it is attached. Any tension on the capsule has a tendency to displace the cartilage. Some of the fibers of the quadriceps are inserted rather low down on the inner side of the capsule and this prolongation might pull in such a manner as to disturb the normal contour of the fibrocartilage.

Furthermore, the anterior extremity of this semilunar cartilage is more or less loosely inserted.

It is generally conceded that injury to the semilunar cartilages very rarely, if ever, occurs with the knee in full extension. When the knee is flexed to about 150° and the foot everted and rotated outward, the relaxed internal lateral ligament allows of some separation of the internal condyle from the internal tuberosity of the tibia. If the force continues, with the foot in eversion, there is a tendency for the tibia to rotate outward on the femur, carrying with it the internal semilunar cartilage, and as attempt is made to extend the knee, the internal condyle of the femur rolls down on the anterior extremity of the cartilage and catches and holds it; and unless the cartilage slips from between the bones, it will be torn from its rather loose anterior mooring. If the rotation is considerable, the condyle of the femur may catch the cartilage rather far back and rip it longitudinally through its middle.

In certain cases the capsule may be so lax that the cartilage will slip out when caught before serious damage is done. Pain, effusion, and disability will ensue. At operation the cartilage appears normal, but too loose. Removal of the anterior three-fifths affords relief.

It is generally conceded that the patient should not be operated upon if there has been only one locking. In such cases a plaster-of-Paris cast is applied, leaving it on six weeks; there will be but few recurrences. In cases where there has been locking for years, the loose end of the cartilage may be palpated, and may have deposits of calcium shown in the radiograph; but as a rule the X-ray is of use only in excluding loose osteocartilaginous bodies.

The author had a series of 101 operations on the semilunar cartilage, and of these the external was removed but five times. The external semilunar should be removed only on a definite history of pain at the outer side of the joint in conjunction with distinct locking.

Next to the internal semilunar cartilage loose bodies have been the most frequent cause of derangement in the knee-joint. Foreign bodies, as a bullet or needle, are infrequent in private practice, but osteocartilaginous bodies are often found. They may be produced by: (1) direct trauma knocking off a piece of the articular surface of the internal or external condyle of the femur or patella; (2) osteochondritis dessicans; (3) osteochondromatosis; (4) hypertrophic arthritis.

Koenig first described the condition of osteochondritis dessicans and advanced the theory that the end artery supplying this area became plugged, and the part became undernourished and sloughed off. The joint is unhealthy and the slightest trauma such as a quick turn or the arising from a sitting position on the ground may produce the first symptoms. The number of loose bodies produced in this way rarely numbers more than two or three, and careful inspection of the radiograph will disclose the source as a flattened area on the internal condyle.

In osteochondromatosis there is an associated synovitis; the lining is inflamed, somewhat thickened, and pedunculated into teats. Some are fibrous, and others cartilaginous, becoming bulbous. They drop off and wander about in the synovial sac, are nourished by the joint fluid, and increase in size. There are factors which suggest these to be of the order of a new-growth. In one of the author's cases there was a chondromatosis formation in the lower end of the femur, which later became malignant; the patient died with metastases in the lungs.

In older people marginal osteophytic growths in marked cases of hypertrophic arthritis may break off and wander about the joint. In younger people with loose bodies there may develop a hypertrophic arthritis as a secondary condition. The symptoms produced by a loose body or bodies are catching or locking at irregular intervals, associated with pain and perhaps effusion, followed by a period of relief, provided the body finds a resting place so that it is not caught between the articular surfaces.

Loose bodies of the knee-joint demand removal. By means of the radiograph their position can be definitely determined. If only in the suprapatellar pouch, they may be removed under local anæsthesia. A sharp cutting needle is thrust through the skin directly into the body, thus fixing it securely before it is cut down upon. When the body is in the middle of the joint, usually at the inner condyle, the same incision is used as in removing an internal semilunar cartilage. If the entire anterior compartment must be explored, the patella and lower fibers of the quadriceps may be split longitudinally. If some bodies are in the posterior section, they may be worked through to the anterior. If necessary, the posterior compartment of the knee may be opened at a secondary operation. In a fleshy person this procedure is attended with considerable difficulty and some risk. Palpation within and without and the use of long forceps may be necessary for the removal of all loose bodies in some cases. As many as 200 have been removed in a single case.

P. W. SWEET.

Lane, A.: Fractures in Warfare. *Practitioner*, Lond., 1918, ci, 181.

The author describes the various types of fractures that are seen in warfare, classifies them, and discusses the treatment. He lays special stress upon the fact that all are not compound fractures produced by projectiles but that a great many are produced from other incidents of warfare. The fractures are classified as follows: (1) simple; (2) compound not produced by projectiles; (3) compound produced by projectiles.

He states that simple fractures have often been mistreated by imperfect operative technique, resulting in overlapping and angular deformity; by disregarded axial relationships, non-use of proper plates and screws, and lack of proper after-treatment such as splints, extensions, and braces, resulting in non-union and deformity.

In compound fractures not produced by projectiles, a surgeon must obtain accurate apposition of the fragments if he possibly can by manipulation, traction and splinting. If it is likely that no infection has taken place, a plate may be employed with advantage. The character of a compound fracture depends upon the degree of infection; many may be no more serious than a simple fracture, while others may have all the risks of a compound fracture produced by a projectile.

In compound fractures produced by projectiles, it is first important to excise any damaged soft parts and remove any obviously useless fragments of bone. No special treatment of the bone is called for other than extension to bring the fragments into apposition.

Overlapping should be unusual because of the free drainage of blood and serum, and destruction of large amounts of soft parts which form the ties in the length of the limb, and which are not shortened in any degree as they are in simple fractures.

No operation for the restoration of deformed bones should be performed until all possible means of discovering buried organisms have been tried. Bone grafts are useful to fill up gaps or to aid in union.

His conclusions are as follows:

1. Only in very exceptional circumstances is it advisable to fix fragments of broken bones together by means of plates and screws while the wound is foul.

2. If, for certain reasons, such a procedure is deemed necessary, screws should not be inserted near the broken extremities, but as far from the seat of fracture as possible.

3. It is advisable to postpone operative interference until the wounds have healed for some considerable time and until the tissues are, in all probability, free of organisms. This can usually be determined with reasonable certainty.

4. If any apparently septic focus is observed during an operation, a culture and a vaccine should be obtained from it and employed at once, should symptoms of infection of the wound develop.

5. Should there be any definite suspicion of the presence of latent sepsis, irrigation by Carrel's or a similar method must be adopted at once. If not, the wound should be closed completely at operation.

6. Every attempt should be made to avoid any shortening of the limb.

7. The apposition of the whole area of the broken ends is not necessary, since the interval will fill up subsequently by bone if suitable means are adopted. Fragments of bone or callus should be saved and employed to fill any interval between the pieces of the shaft.

8. Much heavier steel plates are required in this class of cases than are usually employed in the less comminuted fractures of civil life. It is most important that the muscles and joints which are in relation with the fractured bone shall be moved voluntarily by the patient as soon as possible after the operation, in order to avoid stiffness and limitation of movement, especially in the case of the joints of the knee, ankle, and foot. In order to obviate this trouble, without risking the security of the junction, the plates which are employed to retain the fragments in position must be as long and as strong as circumstances will permit. They should be secured by as many screws as possible. The plates that are often employed are quite inadequate for the purpose. It is obvious that such early treatment cannot be adopted when the fragments are very fragile and the grip of the plate and screws are insecure.

9. Providing no strain shall be exerted on the junction likely to develop non-union, the sooner the patient who has been operated upon for fracture of one or more long bones of the leg is got up and about, the more bone will be deposited and the more rapid will be the repair at the seat of fracture. For this purpose a good ambulatory splint is a necessity in certain cases.

10. Should the interval between the fragments be so considerable that union is not likely to take place, even after prolonged congestion, brought about by the use of an ambulatory splint, the fragments should be secured in perfect alignment by a plate fixed vertically behind the center of the shaft. When this has been done, a portion of one of the fragments, which is usually equal in thickness to a third of the total circumference of the shaft, can be sawed and chiseled off and secured over the interval between the fragments, any piece of bone removed to accommodate the graft in the other fragment being fitted to occupy such existing interval as may be left between the bones. If enough material cannot be obtained from the fractured bone to make a graft, it must be got from some other bone.

11. Most of the failures of bone grafting for extensive loss of substance are due to the surgeon's depending on the unsatisfactory grip which the graft alone can be made to exert upon the fragments of the shaft. The essence of success depends on the absolute immobilization of the fragments of the shaft on one another, and of the graft upon those fragments. It is obviously ridiculous to attempt to retain the fragments of bone in a useful position by bone grafts alone in these compound fractures produced by projectiles, as it is in any fracture in which the material securing the fragments in position has to bear considerable strain. In grafting bone into gaps in the lower jaw, fixation is supplemented by interdental splints which lock the jaws.

12. Much has been written about wire screws and plates which act as foreign bodies if used in simple fractures, producing a rarefying osteitis around them. Should such rarifying osteitis exist, it is undeniable evidence that the technique of the operator is faulty, and not the procedure. The remedy is in the hands of the surgeon, who must improve his methods. Frequent failures in unskilled hands have led many to attribute their want of success to the employment of steel plates and screws, and to attempt to avoid sepsis by using other and much less effective means.

13. While the operative treatment of compound fractures produced by projectiles is the most important of all surgical procedures in warfare, it is, perhaps, well to remember that it may demand a degree of asepsis, mechanical skill, resource, and judgment in excess of that required for other operations for war conditions.

14. Besides that of sepsis, usually introduced from without, though occasionally developed from a latent infection, hæmorrhage is the chief risk which is associated with these operations. This can be best avoided by the use of very powerful hæmostatic forceps, which are left in position in the wound for as long as possible during the course of the operation. A ligature is rarely required. It is most important that the wound should be left as dry as possible. When much oozing is expected to follow the operation, a long drainage tube may be left in the wound for twenty-four hours, and so arranged that the extravasated blood may be carried free of the dressings. The removal of the tube does not necessitate any change of dressings, for they are not moistened by the blood. C. C. CHATTERTON.

SURGERY OF THE BONES, JOINTS, ETC.

Jean, G.: Deep Cutanization of Bone in the Treatment of Chronic Osteomyelitis (La cutanéisation profonde des os dans le traitement de l'ostéomeyélite chronique). *Presse méd.*, Par., 1918, xxvi, 452.

Jean does not like the continuous repetition of operations in the treatment of chronic osteomyelitis; curettage he thinks is more or less blind and often results in the infection of healthy tissue without reaching existing infected foci.

He removes sequestra by means of Doyen's spherical bone-cutting instrument, which is operated electrically. This instrument gives regular cavities which are washed out with serum. The results obtained by the various methods now in vogue of filling bone cavities Jean considers defective. He prefers to strip the cutaneous edges of the wound, and to invaginate and fix them in the bone cavity. The method has given him excellent results, and although not æsthetic, they obtain rapid recovery.

W. A. BRENNAN.

Mériel: The Vicious Scars of War Wounds and Their Surgical Orthopedic Treatment (Les cicatrices vicieuses des blessures de guerre et leur traitement chirurgical orthopédique). *Rev. d'orthop.*, Par., 1918, vi, 203.

Mériel refers to the functional disturbances which result from vicious cicatrization of war wounds. No matter where situated, the normal functions of the muscles are attacked and interfered with to a varying degree by fibrosis and adhesions. Such patients are generally rendered temporarily incapable of resuming their military duties. Mériel has during the past two years observed more than 200 such patients and has operated upon 160 cases.

Operation commences by making two elliptical incisions, circumscribing the cicatricial tissue at its junction with the healthy skin. The bistoury then freely cuts down into the sclerous musculo-aponeurotic block of tissue by two similar elliptical cuts made at the union of the sclerous and normal muscular tissue. The whole sclerous block is excised like a tumor, taking care to leave none behind, as this is often a source of latent sepsis.

It sometimes happens that in the arm and leg, tendons are found to be involved in the midst of the scar tissue. In particular the non-retraction of the central end of the tendon is almost constantly observed in tendinous injuries of war. In 82 of his operated cases in which the tendon was involved, the author only observed a retracted central end three times. What occurs is that nature makes an attempt by means of the scar tissue to bridge the two ends of the tendon; the anatomic continuity of the two tendon ends is established by means of the cicatrix. Hence this fact must be taken into account when operating in such a scar and the cicatricial block must be disengaged in such a way that this anatomical continuity may be spared in order that the function of the tendon may be preserved.

The author, after trying other expedients, has been led to the exclusive use of fat grafts as a wrapping for the isolated scar tissue connecting the tendon ends. Such fat tissue can always be easily and readily obtained from the patient's gluteal region. In 23 cases in which the author has used it, he found that there was no absorption of the fatty tissue and that the scar tissue preserved its mobility.

Treated in such fashion, adherent scars of war wounds are no longer a source of functional disability. A great part of the operated cases have resumed their military service, others were benefited and fitted for the auxiliary service. The actual results obtained were: 48 per cent fitted for return to the army; 32 per cent fit for the auxiliary services; 20 per cent failures.

The author points out that in the preliminary treatment at the front, if all contused or even suspected tissues are freely excised, the resulting scars are supple. The later reparative operations are necessitated by defective tissue left behind in the first instance. W. A. BRENNAN.

Neumann, Gernez, and Autepage: Bone Grafting in War Surgery (Greffes osseuses en chirugie de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 1291.

Mauclaire in submitting reports from these authors to the Society of Surgery of Paris reviewed the results of bone grafting during the present war.

The following types of graft are distinguished:

1. Total segmental end-to-end bone grafts comprising the whole thickness of the bone.

2. Partial segmental bone grafts.

3. Plate or lateral splint grafts. The multiple peripheric splint grafts of Codivilla and Albee's centrolateral splint graft.

4. Central intramedullar grafts.
5. Subperiosteal lateral grafts.
6. Pediculated antografts of various kinds.

In September, 1916, Mauclaire collected 61 cases of bone graft in war surgery: 5 heteroplastic grafts with 3 failures; 4 homoplastic grafts with 3 failures; 52 autoplastic grafts with 17 perfect results, 2 incomplete consolidations, 2 probably good results, 2 doubtful results, 22 failures, and 3 unknown.

A second series of 67 cases from September, 1916, to July, 1918, gave 45 successes, 15 failures, and 7 unknown results.

Segmental end-to-end graft is the ideal treatment for loss of bone substance. Autoplastic grafts are preferable to homoplastic grafts, and especially preferable to heteroplastic grafts in war surgery, as well as in civil surgery. Homoplastic bone grafts easily atrophy.

If grafting is impossible, recourse must be had to Lambotte or Lane plates, or to some osteosynthetic procedure.

Mauclaire thinks that the splint method of Codivilla requires too much manipulation, and that in the employment of Albee's method the graft is not thick enough.

There remain at present only two methods of repairing large losses of bone substance: the segmental graft in various techniques, and Ollier's osteoperiosteal grafts. As far as present knowledge goes, osteoperiosteal grafts appear to Mauclaire to be indicated for small losses of substance, and the segmental graft when the loss of substance surpasses 3 to 4 cm. Osteoperiosteal grafts are more easily carried out and good results are more constant.

W. A. BRENNAN.

Osgood, R. B.: Notes on Excisions of Septic Joints. *Am. J. Orthop. Surg.*, 1918, xvi, 323.

In this paper the author's object is to note chiefly "one thing not to do." That is, not to perform radical excision of septic joints, but merely to secure proper drainage and remove as little bone and joint structure as possible. Bone fragments should not be removed unless one is compelled to do so, since fragments apparently dead are many times useful foci of bone regeneration in securing strong or properly ankylosed joints.

In the author's experience radical excision of septic joints gives poorer results than no treatment at all. Painful, incomplete ankylosis, with sinuses, or flail joints, are usually the end-result after multiple operations. The results of joint excision in civil practice, such as for tuberculosis, cannot be approached, much less approximated, by excision of the septic joints of war wounds. When ankylosis can be secured, it should be at the useful angles laid down by Robert Jones.

It is to be regretted that the author did not discuss a wide open method of treatment of septic joints such as is represented in the Mayo operation for acute pyarthrosis of the knee.

WILLIAM THALHIMER.

Steindler, A.: Orthopedic Operations on the Hand. *J. Am. M. Ass.*, 1918, lxxi, 1288.

Conditions existing in the wrist and hand compare favorably with those of the foot and ankle for reconstruction work. Since the position of dorsal flexion of the wrist is the one of greatest strength and usefulness, it becomes essential and necessary that the wrist-joint, once brought into hyperextension, should be held there rigidly so as to provide a firm stabilizing position. Many cases of flexion contraction or drop-hand lend themselves to the application of tendon transference with favorable results.

Reconstruction work of the thumb was carried out for the relief of: (1) inability of opposition of the thumb; and (2) inability of extension of the thumb. Great stress is laid on the mechanical and muscle educational side of the after-treatment.

R. B. COFIELD.

Thévenard, D.: Skin Flaps for Closing Bone Defects Following Osteomyelitic Foci (Procédé d'obturation par autoplastic cutanée des larges pertes de substance osseuse consécutives au traitement par l'evidement des foyers d'osteite). *Presse méd.*, Par., 1918, xxvi, 515.

The most general treatment of fistulized osteomyelitis consists in opening up and cutting away the bone with gouge or chisel. But a large open wound is thus formed, and cicatrization is extremely slow. Surgeons have tried to fill these bone cavities by various kinds of fillings, as well as by grafts and autoplastics.

The author's method consists in filling the bone cavities by means of strips of skin cut in the vicinity. The prior osteotomy is very thorough, as it is necessary that there should be neither suppuration nor any eliminition of sequestra between the vivified osseous surface and the under surface of the covering skin layer.

The strips of skin may be pediculated or they may be moved to their position by sliding.

The method followed in dealing with a tibial diaphyseal loss of bone, for instance, is to make four incisions in healthy tissue about the lesion, two transverse and two longitudinal joining the others; the cavity to be filled is thus between the four incisions. The transverse incisions continue inward and outward to the posterior half of the circumference of the leg. The incision is carried down to the aponeurosis. Seizing the free lateral edge of each skin strip with a forceps, they are then freed for the full length of the transverse incisions. The author says that there will be no difficulty in stretching these strips so that the two vertical edges can be approximated in the cavity to be filled.

The author gives details showing modifications in the shape of the edges of the skin strips to be approximated when it is necessary to fill certain types of cavities. The edges must join neatly, without folds in the cavity.

No tampons or dressings can prevent retraction of the strips and they must be sutured to the walls

of the cavity. The author describes and illustrates an ingenious method of suturing, the sutures passing through the bone and muscle to the skin beyond the limit of the strip. The edges of the strips are brought together by finer sutures.

The author has obtained complete satisfaction by following this method in cases which had previously been operated upon several times and which had passed over three years in hospitals.

W. A. BRENNAN.

ORTHOPEDICS IN GENERAL

Mebane, T. S.: The Foot Problem. *Mil. Surgeon*, 1918, xliii, 377.

The author describes how the management of foot cases was carried on at his camp and the results obtained. He states the orthopedic surgeon's camp duties are: (1) the prevention of foot trouble; (2) the elimination of the unfit; (3) rehabilitation of men with remediable foot conditions.

The first was accomplished by educational means, the second by examinations, and the third by the establishment of an orthopedic camp.

Educational methods comprise: (1) lectures to line officers; (2) care that the line officers receive foot-fit men; (3) care that enlisted men receive proper shoes.

In making examination, the patient walks across the room, mounts a table, all visible defects being noted. The position of the scaphoid is noted with the thumbs, toes are examined, the joint motion noted, the heel inspected, and the length of the tendo achillis is noted; also callouses and corns.

The following types among white soldiers are not suitable for overseas duty:

1. Flaccid flat-feet with marked abduction or eversion.
2. Rigid or spastic flat-feet.
3. Rigid arthritic or post-traumatic feet.
4. Marked cavus.
5. Pes varus or valgus following fracture.
6. Extreme hallux valgus associated with painful bunion or metatarsalgia.
7. Hallux rigidness.
8. Amputation, partial amputation, or severe derangement of joints of the great toe.
9. Proved exostosis of the undersurface of the os calcis.

The following types may be accepted with the assurance that they may be made fit in a short time in the greater majority of cases:

1. Flaccid flat-feet without much abduction or eversion.
2. Ankle valgus, not the result of fracture.
3. Poorly developed but not pathological feet.

In the colored troops 40 per cent have flat-feet, and only the cases in which rigidity was present were rejected on account of flat-feet.

In the foot camp, shoes were properly fitted, altered, foot exercises given, and the men were put in classes with those that did no drill and light detail, foot exercises plus drill, or those that did foot exercises and heavy drill. He found that 70 per cent of these could be cured and returned to duty. He was able to detect easily, besides the purely physical types, the timid and the malingerers.

C. C. CHATTERTON.

SURGERY OF THE SPINAL COLUMN AND CORD

Nutter, J. A.: The Importance of Care in the Diagnosis of Back Conditions. *Am. J. Orthop. Surg.*, 1918, xvi, 351.

The author cites several case histories, to illustrate points in the diagnosis of back conditions.

Case 1 was that of a man forty- wo years old who came with a diagnosis of tuberculosis of the spine. He suffered constant and severe pain for several weeks, and the radiographic report was Pott's disease in the dorsal region. The X-ray showed a marked foggy appearance of four or five vertebræ at the level mentioned. However, on X-raying the entire spine there was seen a marked lipping in the lumbar region, indicative of old cured rheumatoid disease. In connection, the hazy appearance in the dorsal region can be disregarded safely as a sign of grave disease.

Case 2 was that of a somewhat similar condition in which the radiographer diagnosed tuberculosis of the last lumbar vertebra. Fresh X-rays showed some irregularities in the outline of the fifth lumbar vertebra, corresponding with well known congenital deviations from the normal. In addition the lumbar bodies showed slight indications of rheumatoid disease. The patient derives great relief from a well fitting back brace.

Case 3 was that of a young married woman who presented herself encased in a heavy plaster spica, with the diagnosis of sacro-iliac tuberculosis. This condition has been treated for the past eighteen months. On examination there was no swelling, œdema, or redness, contrary to expectation. There was no muscle spasm, and but slight limitation of motion of the back. There was, however, pain and tenderness in the region of the left posterior superior spine, although there was no pain on forcing both iliac crests together. Her feet were found to be badly pronated. The X-ray showed a peculiar developmental condition in both sacro-iliac joints, the appearance of which have a certain resemblance to disease. The diagnosis was therefore sacro-iliac strain and the condition yielded rapidly to a sacro-iliac support and foot plates.

Case 4 was that of an eight-year-old girl, complaining of scoliosis which manifested itself since the age of eight months. Apparently there had been

considerable pain, while the spine became more and more crooked. She was wearing a heavy correcting jacket, a series of which she had been wearing for a long time. Examination showed a severe scoliosis with a double curve and rib rotation. The X-ray showed an old healed tuberculosis at the dorso-lumbar junction, at which place the primary curve had occurred. A convalescent back brace, giving moderate correction to the deformity, was applied.

Case 5 was that of a young woman, markedly neurasthenic, wearing a back brace, believed to have Pott's disease of four years' duration. On examination, there was nothing except slight tenderness along the spine, more particularly between the shoulders and in the lumbar region. Her feet were pronated and she had a visceroptosis and round shoulders. X-ray was negative. The condition therefore suggested an irritable spine, associated with neurasthenia. A six months' leave of absence, and attention to her feet and round shoulders, is producing good results. J. J. KURLANDER.

Maragliano, D.: The Clinical Value of the Albee Operation in Pott's Disease (Il valore clinico dell'operazione di Albee nel morbo di Pott). *Policlin.*, Roma, 1918, xxv, sez. chir., 257, 289.

The author gives an historical sketch of the application of Albee's method in the treatment of Pott's disease and gives short clinical histories of 34 cases of tubercular spondylitis which he personally operated upon in his hospital service in Genoa since early in 1915. Of the 34, there were 8 deaths at different periods after operation due to intercurrent disease or to new localizations of the tubercular process; 3 were lost to view before a final judgment of the effect could be made; 23 are living and have been followed. In 12 of these patients, recovery was obtained and maintained in most cases more than three years; in 5 cases there are signs of recurrence after a period of apparent recovery or improvement; in 6 there has been no recovery, and in 3 of these the condition is worse than before operation.

From the author's study of the nature of the disease and the applicability and indications for Albee's operation, his impressions are clearly favorable to this operation. Lasting results would probably be more constantly obtained by prolonging the duration of the horizontal decubitus to five or six months and by maintaining the corset for at least another six months. Albee's operation deserves to be included in the therapeutic armamentarium in use for Pott's disease, and under certain aspects to be considered as signalizing a notable progress. This conclusion may not seem to be warranted by the not very high percentage of permanent recoveries shown in the author's statistics; but in answering the objection the author points out that these patients all belonged to the poorest classes and among them only one or two would have obtained a recovery similar to that actually obtained, if they had not been treated in this way.

In 2 of the cases in which the author was able to make an autopsy, his findings confirm the views put forward by some others, which modify the conclusions of Albee as regards free autoplastic osteoperiostic transplants. He finds that the transplant undergoes important degenerative changes but that it does not totally die. It maintains its primary characteristics for at least six months according to the histologic findings, and judging from the radiographic findings, for a much longer period which the author is unable to define.

The article is accompanied by histologic and radiologic illustrations. W. A. BRENNAN.

SURGERY OF THE NERVOUS SYSTEM

Gibson, A.: Injuries to the Peripheral Nerves as Observed in Soldiers Returned to This Country for Reconstruction Work and Care. *J.-Lancet*, 1918, xxxviii, 585.

Injuries to the peripheral nerves in military work are astonishingly numerous. Unless actually looked for, these injuries frequently escape detection. The author gives a brief review of the anatomy of a nerve.

When a nerve is cut, changes occur in both the proximal and distal segments, but more evident in the distal segment. All the constituents of a nerve fiber show changes which are characteristic of degeneration. If circumstances are favorable, however, the nerve-path will be re-established. The process by which this takes place is known as regeneration. For many years there was controversy between the protagonists of "central" and "peripheral" regeneration respectively. One school believed that the new nerve-fiber grew from the point of section toward the periphery, the peripheral portion of the nerve furnishing merely a path along which growth might occur. The other school taught that each segment of the peripheral portion of the nerve reconstructed anew the fresh portion, so that the process of regeneration consisted mainly in a linking up of a number of new portions.

In gunshot wounds of nerves there are a number of complicating factors, the most important of which is scar-tissue. Almost without exception gunshot wounds of nerves involve the presence of sepsis; many are associated with compound fractures of bone. When healing finally occurs and the necessary period of from four to six months has elapsed after cessation of all discharge, such a nerve is found embedded in dense scar-tissue, which, as a rule, not only compresses it from the outside, but has penetrated between the fibers, strangling them individually. This scar-tissue is always a disadvantage.

A second great difficulty is that during the time between the reception of the injury and operation,

the muscles that are supplied by the injured nerve are allowed to become stretched by their antagonists, with the result that various contractures develop. This condition may be avoided by appropriate splinting, by the use of gentle massage, and a light galvanic current.

When a case is presented for diagnosis one must ascertain, first, the existence of a real nerve lesion; second, the location; third, whether it is complete or incomplete; fourth, if incomplete, whether it is progressing toward recovery. He emphasizes the fact that the diagnosis of peripheral nerve lesions is almost entirely a matter of anatomy. One should know the nerve supply of each muscle, and the point where the nerve branch enters the muscle. The sensory distribution of the nerve, the relations of the nerve to other structures at various parts of its course, must equally be known.

In the examination three essential points are necessary: date of injury; date of complete healing; previous treatment. Objective examination is, of course, of chief importance. First is inspection of the patient. Note his attitude, watch him in action, look for alterations of shape, color, contour. Assist the eye by the use of a measuring tape.

Next is the sensory examination. Test with cotton wool for epicritic sensation. Test with a pin for appreciation of sharp and blunt. Test with the end of a fountain-pen for deep sensation. Map out carefully the areas of loss of sensation.

After this comes the investigation of motor disturbance. Here one must bear in mind the muscles supplied by each nerve.

Lastly comes the electrical investigation. Muscles must be tested for their response to faradism and to galvanism. If a response be given to faradism, it may be assumed that the nerve path to the muscle is still present. If no response be given to faradism, but the muscle responds to galvanism, it is taken as an indication that the muscle-fibers are still excitable. When the muscle-fibers show no response to either current, it is an indication that the process of degeneration is pronounced and the time of recovery will be correspondingly prolonged.

Next is the matter of treatment. If one decides the lesion is complete, then he must explore and attempt a restoration of the original function. This may consist simply in liberation of the nerve from a strangling cuff of scar-tissue, or in the removal of the portion of the nerve-path which is definitely blocked.

If the lesion is incomplete, one must ascertain whether there are signs of regeneration in the nerve below the site of the lesion. If so, is the rate of progress sufficiently rapid to warrant maintaining non-operative treatment, or is the progress so tardy that one should intervene and attempt to hasten things. To ascertain the rate of progress, careful surveys at a definite interval must be made, during which time the patient has been having steady treatment with massage and galvanism.

Most cases of peripheral nerve injury present, in addition to complete interruption, some of the phenomena of irritation. Trophic disturbances are apt to be prominent. The skin will probably be dry, or it may sweat profusely, and the condition of glossy skin will be present. There is likely to be a considerable amount of œdema and cyanosis. The nails will be much curved. The ends of the fingers will be narrow and conical. Beneath the nails a curious pad appears. Sometimes the phenomena of pain develop in a painless wound after liberation of the nerve from the strangling scar. The author cites a case of this kind.

In the cases of incomplete interruption there is frequently present a tender scar which is directly continuous with a nerve-trunk.

In the non-operative treatment of nerve injuries there is only one principle, namely, that the muscles must be maintained as long as possible in good condition. On the one hand, very light massage and mild galvanism should be applied daily for months, if necessary. On the other hand, it must be borne in mind that a paralyzed muscle should never be overstretched. This may be done by the use of suitable splints.

In the operative treatment of nerve injuries, the author advocates the use of a tourniquet. He uses nothing but plain catgut for coaptation and can see no reason for the use of either silk or chromic catgut. All scar tissue must be removed until the cut ends of the nerve appear in the field.

The types of operation employed are, first, neurolysis; second, partial suture; third, end-to-end suture. In connection with the latter the author has tried several devices, such as the lateral implantation of proximal and distal nerves into an intact nerve. In one case, the external popliteal was inserted into the internal popliteal, with an unsatisfactory result. A second operation was performed, and by means of plaster-of-Paris casts keeping the knee-joint fully flexed, the ends were brought together. In two months the signs of regeneration were most encouraging. He has also made use of nerve grafts, but the results have not been satisfactory in the four cases in which it was tried. In one case of lesion of the ulnar in the forearm, the cut ends, after full flexion of the wrist, were still separated by a gap of over an inch. He used two stay-sutures of No. 2 plain catgut and a fascial wrap from the thigh, but it is too early to speak positively about the result.

In cases where nerve function cannot be restored, tendon transplantation must be employed.

He has made use of a tube of the deep fascia over the vastus lateralis muscle to form an insulating tube around the nerve function. The results have been such as to lead to the conclusion that it does no harm, may sometimes do good, is usually unnecessary, prolonging the operation, and that it forms no substitute for accurate coaptation without tension.

As to the prognosis, about 60 to 70 per cent will attain a large measure of recovery without operation.

Of the operated cases, probably 90 per cent will show improvement, which may proceed as far as complete recovery, provided adequate non-operative treatment is given, and especially if the paralyzed muscles are kept relaxed and if deformities are foreseen and guarded against.

Nerve injuries demand for their treatment faith on the part of the surgeon and confidence and steady co-operation on the part of the patient.

G. W. HOCHREIN.

Mackenzie, K. A. J.: The Repair of Large Gaps in Peripheral Nerves by Neuroplasty. *Surg., Gynec. & Obst.*, 1918, xxvii, 353.

The author submits three cases to illustrate the utilization of nerve flaps of both central and distal origin in order to bridge unusually large gaps in peripheral nerves.

The first case was a resection of 10¾ inches of sciatic nerve for a spindle-cell sarcoma which originated in the perineural connective tissue at the middle of the back of the thigh. In the first operation seventeen days after resection a flap 16¾ inches long of the popliteal was lifted, turned back, carefully buried in muscle and tucked into a split made in the stump of the sciatic. Improvement followed, but in 67 days after the resection a third operation was done. This turned back to the proximal sciatic stump a flap of similar length from the external popliteal. Great care in handling was observed and the flap was as before imbedded between muscle layers. Recovery of almost complete motor and sensory functions in the affected area has occurred.

The second case was one in which a gunshot wound infection and scar tissue had destroyed the last three inches of the sciatic nerve and 2½ inches of both popliteals. In this case flaps of the sciatic were turned down and run through tunnels in the hamstrings to the previously anastomosed popliteals. An almost complete return of function followed.

In the third case a one and one-half inch flap from the proximal stump of a divided musculospiral nerve was turned down. This was done with success and complete return of function in the presence of an ununited osteomyelitic compound fracture of the humerus which was cleaned out and plated at the same time.

The author's conclusions follow: "The study of this limited group of cases would seem to warrant certain deductions, namely: (1) that regeneration and recovery of function is promoted by the use of nerve flaps; (2) that both central and peripheral flaps can be used for such purposes; (3) that a peripheral flap, by laying down a nerve path, may promote regeneration over a great gap, in one case quoted ten and three-fourths inches; (4) that the approximation of nerves and their repair should be done in all cases with the least possible delay (this would apply as well to infected as to clean cases); (5) that the arrest of trophic shock can be promoted by early closure of large gaps by flaps; (6) that unimpaired nerve tissue should always be utilized for the effective repair of damaged nerves; (7) that in their repair, nerves can be successfully sequestrated in muscular tissue so as to promote their own regeneration and that of the muscles in which they are embedded; (8) that the principle of sequestration can be utilized in proper cases so as to avoid infected zones in wounds and also scars and other obstacles to nerve repair.

Erving, W. G.: Orthopedic Treatment of Nerve Lesions. *Am. J. Orthop. Surg.*, 1918, xvi, 346.

The orthopedic treatment of nerve lesions is discussed in a concise, systematic, tabular form. The well recognized means and methods of preventing deformities subsequent to partial or complete paralysis of the important nerves are outlined. The usefulness of properly applied massage, diathermy, and galvanic and faradic electricity is noted; and the value of these methods to maintain a muscle in good condition while regeneration of its nerve supply proceeds is clearly shown.

The operative treatment described goes no farther than to suggest freeing a nerve when compressed by a cicatrix, or to join its ends when continuity is destroyed. No method is given for bridging a gap when the nerve-ends cannot be approximated.

WILLIAM THALHIMER.

Corti, A.: Experimental Research on the Protection of Nerve Wounds (Esperienze e ricerche sulla protezione delle ferite dei nervi). *Chir. d. org. d. mov.*, Bologna, 1918, ii, 323.

The author refers to the mechanical protection of a tract of injured nerve by wrapping rubber or some organic substance around it; and especially to the method, initiated by Foramitti, of using pieces of fresh artery preserved by a special process. The preservative process consists in immersing the piece of artery in a 5 or 10 per cent formol solution for two days, washing in water, boiling for twenty minutes, and then keeping it in strong alcohol.

Foramitti's experiments were on animals. The author has also tried the method in 3 clinical cases of wounded soldiers.

The experimental and clinical results show that preparations of arterial tissue preserved in this way and used as a protective covering of injured nerve tracts are well tolerated and act as foreign bodies without deleterious effect. It is necessary to immerse the wrapping before application in a sterile solution for a few moments in order to get rid of the alcohol in which it was preserved, which may have an unfavorable effect on the injured nerve fascia.

The studies further demonstrated the very great resistance of arterial tissue thus employed. In the 3 clinical cases the arterial tissue was removed after 225, 194, and 305 days respectively. This resistance to dissolution is especially observed in the elastic elements of the arterial walls and it is this kind of tissue which particularly should be used if there is need for long protection of an injured nerve. Vein

tissue is also very resistant. It is probable that arteries of muscular type offer a different grade of resistance.

The applied arterial lamina, according to the author's view, is a barrier to invasion from the tissues external to the nerve; this resistance and its duration prevent any direct attack; and the relations established between the protective covering and the connective tissues proper to the nerve cannot be other than favorable.

Knowledge gained in the field of nerve reparation, and the record of cases in which functional recovery is only effected after the lapse of a long period, indicate that the use of artery is advantageous and preferable to other substances which are less resistant and less durable. W. A. BRENNAN.

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS, ULCERS, ABSCESSES, ETC.

Janeway, H. H.: Treatment by Radium of Cancerous Mucous Membrane. *Am. J. Roentgenol.*, 1918, v, 414.

Extensive use of radium in the treatment of cancerous mucous membranes at the Memorial Hospital has demonstrated two facts: first, that within the time limits of the author's work, single applications were often sufficient to cause apparent complete retrogressions; and second, in the larger lesions where this favorable result was not obtained, the lesion had become much more of an operable one than it was before treatment.

Thus in 21 cases of cancer of the lip, 8 of the superior maxilla, 9 of the tongue, 3 of the tonsil, and 1 of the soft palate, complete retrogressions were obtained. A number of patients with cancers of the larynx have been greatly improved and definite temporary improvements were obtained in cancers of the œsophagus. Cancer of the rectum offered a most important and fruitful field for radium therapy, and in 8 patients, clinically complete retrogression was obtained. The most promising field of radium therapy among the mucous membrane cancers was cancer of the uterus, and practically uniformly good results were obtained in them. Five cases of mixed tumor of the parotid gland gave almost specific response to radium treatment. The author claims that in cases of cancer of the mucous membranes, in equal stages of growth, the character of the end-result among cases cured by radium, coupled with the ease to the patient by which this result can be obtained far surpasses the results of surgical ablation. ADOLPH HARTUNG.

Major, R. H.: Multiple Primary Malignant Tumors; with Report of a Case of Carcinoma and Sarcoma in the Same Individual. *Bull. Johns Hopkins Hosp.*, 1918, xxix, 223.

The presence of multiple tumors in the same individual has been for many years a subject of much interest. It was early noted and subsequently emphasized that with certain kinds of tumors, the tumor formation was more often multiple than single.

The presence of multiple malignant tumors is, however, comparatively uncommon and Major reports the following case as an example of this interesting condition:

A woman, aged sixty years, was admitted to the hospital with a tumor on the face. This growth, which involved the right side of the nose and extended to the inner canthus of the right eye, had been present for several years and was growing slowly.

The clinical diagnosis of rodent ulcer was made and X-ray treatments of the growth instituted. While in the hospital the patient complained a great deal of headache, had little appetite, and at times talked irrationally. Death occurred rather unexpectedly on May 22, 1917, and the autopsy was performed two hours later.

The autopsy showed a marked bronchopneumonia of both lungs, a generalized arteriosclerosis and extensive scarring of both kidneys. The wall of the stomach was markedly thickened throughout, had a whitish semi-translucent appearance and cut easily. At the cardia of the stomach there was a large polypoid growth which showed some areas of ulceration on the surface. This mass also had ulcerated through the wall of the stomach in one place, forming a sinus which passed by the spleen and through the diaphragm to the base of the left lung when it was closed by dense adhesions. No metastases were noted.

The microscopic examination of the tumor in the stomach showed it to consist of masses of round cells, presenting no especial arrangement and showing a small number of connective-tissue fibrils. Microscopic sections of the tumor of the face showed it to be composed of large atypical epithelial cells arranged in nests and strands. In some areas there were epithelial pearls present and evidence of infiltration downward.

The gross and microscopic evidence in this case shows it to be an example of two quite different types of malignant tumors in the same individual, a carcinoma of the face and a round-celled sarcoma of the stomach.

In order to assist in the understanding of this interesting problem Major made a collection of cases and the various facts as to the location, number, and nature of the tumors considered.

In all, 628 examples of multiple primary tumors have been reviewed. The greatest number of these cases, 389, were examples of multiple carcinomata of the skin, in the same organ, or in each of a pair of organs. This group of tumors has been thoroughly

studied by Theilhaber and Edelberg and as their tables are very comprehensive, no attempt has been made to add to their collection. Tabulations of carcinomata in different organs but belonging to the same system show 43 examples, while carcinomata in various organs not members of the same system of organs were present in 53 instances. In all, 485 instances of multiple primary carcinomata were collected.

The number of instances in which examples of different types of tumors were found in the same person was much smaller; 103 such cases were noted, in 66 of which the tumors were in the same organ; in 9 they were in organs belonging to the same system, and in 48 cases the different tumors were located in various organs. In this group it is of interest to note that in over one-half of the cases (54 per cent) the different types of tumors were located in the same organ. The uterus was the most common seat of two tumors of different types, being represented by 22 instances. The breast and the thyroid gland each showed 10 examples.

The most common combination of different types of malignant tumors was that of carcinoma and sarcoma; 92 instances of this combination were noted, 62, or 75 per cent of which were located in the same organ, seven located in the same system, and 23 in different organs.

In the author's own case it is difficult to draw any very definite conclusions from the presence of two distinct and different tumors. They might be regarded simply as coincident, although the case would seem to be equally well explained by the assumption that the patient was predisposed to cancer and that subsequent irritation in two organs produced malignant growths in both of them. A great variety of combinations of two different tumors is obviously possible, but this is the only instance noted in which the combination of a carcinoma of the face with a sarcoma of the stomach occurred. GEORGE E. BEILBY.

Rohdenburg, G. L., and Bullock, F. D.: The Influence of Heat and Radium upon Induced Immunity Against Transplanted Animal Tumors. *J. Cancer Research,* 1918, iii, 181.

Depression of the growth energy of a transplantable tumor by heat or by exposure to radium increases its susceptibility to the immunizing action of homologous living cells, whether they be normal or tumor cells. With the technique as described in this paper, the additional immunity thus obtained may be 100 per cent over the usual figure.

The increased susceptibility of treated tumor to the immunizing power of living cells is not in evidence when autologous elements are employed, or when homologous tissues are introduced subsequent to tumor implantation.

Tumors which have established a residence in their hosts, i.e., have excited a stroma reaction and obtained a blood supply, are not influenced by retardation of their growth energy with radium and the simultaneous introduction of homologous living cells.

Thus, none of these results lead in any way to the conclusion that the improvement described in human cancer under radium treatment is due to the stimulation of autologous cells or that benefit is to be expected from radium and previous or subsequent injection of homologous lymphoid tissue. Even though the tumors employed in these experiments had been cured, the results could not have been transferred to man, where the problem is to cure a spontaneous, as distinguished from a transplanted, neoplasm. As an animal cannot be immunized against its own tumor, or with its own tissues, it is readily seen that the application of such experiments as these to man can hardly lead to a profitable result. MAX KAHN.

Cannon, W. B.: Shock (L'état de choc). *Progrès méd.,* Par., 1918, p. 290.

The following are the conclusions reported by Cannon of Harvard University to the Franco-American Medical Society at Dijon:

1. In the shocked there is a concentration of blood in the capillaries indicated by the difference which exists between the venous and capillary blood counts. This difference may reach an increase of 2,500,000 red cells per cubic millimeter in the capillaries. It is quite probable that the fall in blood-pressure noted in the shocked is due to the entrance of an insufficient quantity of blood to the left heart. A certain amount of blood seems to be lost from the circulation and the patient suffers as if he were attacked by a severe hæmorrhage. This "lost" blood exists to a considerable degree in the capillaries.

2. Cold has a pronounced influence on the production or increase of shock. A severely wounded man may leave the trenches in good condition, but while being transported to the rear may pass into a state of shock. His condition can be greatly improved if he is put in a heated bed and surrounded by enough heat to restore the normal temperature. It is probable that cold increases the loss of blood by induction of capillary stasis.

3. In the shocked the alkaline reserve of the blood is reduced from the freeing of non-volatile acids which unite with the sodium, driving carbon dioxide off. When this reduction reaches abnormal limits, it results in acidosis.

4. There is an approximate relation between the degree of the acid and the degree of blood-pressure in the shocked.

5. If acidosis already exists, a surgical operation may produce a marked fall in the blood-pressure and a great increase of acidosis in a very little time. Therefore it is dangerous to operate in such cases. Recent findings have thrown much light on this.

6. A fall of the mean arterial pressure to about 60 millimeters of mercury during an hour is not accompanied by a reduction of the alkaline reserve; but if the pressure falls to about 70° the reserve

begins to diminish; and when the pressure falls to 60° it diminishes still more. The phenomena can be explained from the fact that if the oxygen supply to the tissues is insufficient, non-volatile acids like lactic acid are not oxydized, and by uniting with the sodium of the sodium bicarbonate in the blood, assist in developing acidosis.

7. If the low blood-pressure is accompanied by hæmorrhage, the critical point is higher than if there is no hæmorrhage. Thus, if an animal has lost 20 per cent of its blood, the mean pressure cannot be lowered below 80° without indications that there is a diminished supply of oxygen to the tissues. The two preceding findings explain the acidosis which occurs in patients suffering from shock and from hæmorrhage. Another factor can however come into play, namely, acid substances which are liberated by injured muscles.

8. If the blood-pressure is so low that the oxygen furnished to the tissues is not sufficient, the animal becomes extremely sensitive to anæsthesia by ether. A degree of anæsthesia which abolishes the simple reflexes can lower the blood-pressure by 20 millimeters of mercury. The sensitiveness of the organism to ether in shock explains the fall of pressure and increase of acidosis in clinical cases.

9. It had been found that the same degree of anæsthesia produced by nitrous oxide and oxygen is not accompanied by any fall in blood-pressure.

10. If the arterial pressure is lowered either by shock or hæmorrhage below 80° and the circulation is then insufficient, the pressure can generally be raised by the intravenous injection of Bayliss' gum solution.

More than half the volume of the blood of an animal has been removed and replaced by this solution with survival of the animal. The effect of the solution is to increase the arterial pressure to a degree sufficient to produce a more rapid circulation. Thus the cells may be diminished in number, but owing to the more rapid circulation, they function more and avoid the bad effects of a lack of oxygen.

From these considerations the following practical conclusions may be drawn:

1. All measures should be taken to prevent loss of bodily heat in the shocked.

2. If hot water bottles are used, they should be placed to the feet, abdomen, between the thighs, and in the axillar region.

3. If the mean blood-pressure falls below 70° or in case of hæmorrhage below 80°, it will be preferable to increase it by a blood transfusion, or if this is not possible, by an intravenous injection of sterile warm gum solution.

4. Surgical intervention should not be undertaken in a shocked case if the pressure is not artificially raised above the critical point.

5. Nitrous oxide and oxygen are the anæsthetics of choice for the shocked or hæmorrhagic.

6. Every kind of activity needs a supplementary quantity of oxygen for the tissues. Every effort should therefore be made to keep shocked patients in a state of rest. Acidosis will thus be reduced to a minimum. W. A. BRENNAN.

Mann, F. C.: Studies on Experimental Surgical Shock. *Am. J. Physiol.*, 1918, xlvii, 231.

The article consists of four studies on experimental surgical shock. In the first study the subject is considered in a general way. It is emphasized that the condition termed shock by the surgeon is due to a large number of causes, and that experimentally it is very difficult to reproduce the environment and all the phenomena which he calls shock. The author found it convenient to classify various conditions termed shock into two groups. The first group included those cases in which the cardinal signs developed some time after the exciting cause; the second group those cases in which a severe or fatal issue followed immediately or very closely the action of the exciting agent. The author suggested that each of the various theories concerning the etiology of shock are partially true but that not all of them explain fully the cause of the condition.

The second study has to do with the relation of anæsthesia to surgical shock. The effect of a constant ether tension and of slight variations of ether tensions on the different reflexes is discussed. The conclusion is that it is very difficult to study shock unless constant ether tensions which could not be varied by any action of the animal were administered.

The third study discusses the reflex inhibition of respiration as a cause of sudden death during operation. It was found by a study of the various respiratory reflexes under different tensions of ether that the reflex which produced inhibition of respiration was not abolished under high ether tensions in a similar manner to the excitatory reflexes of respiration. On the contrary it was found that this reflex seemed to increase, and under ether tensions just high enough to abolish the eye reflex, it was often possible to produce death by the stimulation of the fibers which inhibit respiration.

The author states that ether tensions that will decrease or abolish the excitatory reflexes of respiration do not seem to depress the inhibitory reflexes, and that in most instances the action of the inhibitory reflex seems to be increased, although this may be only a relative result. Ether tensions that will depress the respiratory center so that it will not respond to the increase of carbon dioxide in the blood usually will not abolish the inhibitory reflex. Under such conditions stimulation of the nerves inhibiting respiration will quite frequently produce death. This may be the process by means of which sudden death is produced during operation. However, death due to inhibition of respiration should never occur under light surgical anæsthesia.

The fourth study concerns the relation of the capillary and venous beds to the signs of shock. It was found that the ligation of all structures of the limbs of a dog, except the major artery, would

usually produce all the signs of shock. The relative amount of tissue involved by these ligatures was on an average approximately 15 per cent of the total body weight. These results following the application of the ligatures were found to be due to: (1) stagnation of circulatory fluid; (2) damage to large areas of tissue in such a manner that their mechanism for controlling food exchange and possibly fluid volume was impaired; and (3) toxic products of cell metabolism and cell disintegration. The probability of these factors being involved in certain cases of shock is discussed.

Starling, E. H.: The Nature and Treatment of Surgical Shock (Nature et traitement du choc chirurgical). *Arch. méd. belges*, 1918, lxxi, 369.

Starling thinks that the essential factor in shock not complicated by hæmorrhage is the passage of the blood of the general circulation into the dilated capillaries which, by a process of exclusion, must be located in the muscles of the body. All other objective symptoms of shock are secondary to the circulatory disturbances. The explanation lies in the fact that men in the trenches are physiologically in a state of high tension or excitement, with a high degree of muscular tonicity and a high degree of tonicity of the arterial system. The proof of this lies in the fact that the blood-pressure of such men is almost always more than 20 mm. Hg. higher than that of men in the cantonments. Starling thinks that this high pressure is accompanied by an increased suprarenal production of adrenalin.

At the moment of wounding, the man is in this state of high nervous tension, with general vascular constriction hypertension. This state is augmented at the time of wounding by the strong stimulation which the sensory nerves then undergo. But at the same moment there is an inhibition of all striated muscles so that there is produced an elevated vascular tonicity with a low muscular tonicity. One of the great factors maintaining the circulation in the muscles is thus abolished. Other factors contribute a greater blood supply to the muscles; the blood reaching them remains there and the muscular capillaries dilate. A veritable phenomenon of interception is produced. A diminution in the supply of oxygen to the tissues follows, from which local acidosis results. The final result is a deficiency in the return flow of blood to the heart and a deficient circulation. The tissues deprived of their nourishment produce fixed acids instead of CO_2, with subsequent diminution of alkaline reserve. The capillary dilatation must therefore be considered as the primordial and essential factor in shock.

Shock is therefore rather a state of hyperstimulation than a paralysis. All stimulating treatment is thus contra-indicated. Adrenalin and strychnine are hurtful. Morphine is indicated. To restore the normal pressure a blood transfusion is indicated. But good results can be obtained from the much less difficult injection of saline solution to which gum arabic and sodium bicarbonate have been added. The liquid recommended is a 5 per cent gum arabic solution containing 2 per cent of soda bicarbonate, filtered and sterilized. An injection of 500 ccm. of this is made in the shocked.

W. A. BRENNAN.

Schumann, E. A.: A Study of Dystrophy Adiposa Genitalis in Women. *Am. J. Obst.*, N. Y., 1918, lxxviii, 428.

The syndrome resulting from the effects of deficient pituitary secretion upon the female sexual system may be properly divided into three clinical groups, according to the sex epoch affected.

Such terms as amenorrhœa of obesity, and lactation atrophy or superinvolution of the uterus are no longer correct, since it seems reasonably well proven that both these conditions are but phases of a primary hypopituitarism.

Definite retrogression of the reproductive tract may follow deficient pituitary secretion in parous women of mature age and may and frequently does give rise to an erroneous diagnosis of pregnancy.

Treatment for all groups consists in general measures and the empirical use of glandular extracts, the systolic blood-pressure being a fair index of the particular gland substances to be employed; low pressure indicating pituitary, high pressure thyroid.

The prognosis is guarded in all cases as to recovery, but is favorable in direct ratio to the age of the patient.

EDWARD L. CORNELL.

Demolon, A.: The Chemical Constitution of Pus (De la constitution histochimique des pus). *Presse méd.*, Par., 1918, xxvi, 443.

The author has made a chemical study of the pus of warm and cold abscesses.

The pus of a warm abscess if examined microscopically is seen to consist of numerous leucocytes, the majority being neutrophile polynuclears, in a mucous substratum. Under the influence of inflammatory phenomena the leucocytic migrations seem to be accompanied by an exudation of mucous substance forming the interstitial cement of the connective tissue. About 25 per cent of the leucocytes are living. In pus cultures, at one time phagocytosis, at another cytolysis predominates. Beside the intact leucocytes, more or less altered polynuclears are found; but even in very septic effusions degeneration never reaches complete cytolysis.

For chemical study the pus is suspended in a 1:100 chloride of sodium solution, shaken, filtered, treated by acetic acid, precipitated, tested with ammonia water, etc. In a pus free from serum and blood there is but a small proportion of soluble albuminoids, only about 5 or 6 gr. per liter of pus. When the proportion of soluble albuminoids is noticeable, it is a sign of a deep inflammatory process.

The pus of a warm abscess shows a notable proportion of albumoses and peptones which denotes the digestive activity of the leucocytes. Such a pus is

strongly proteolytic and digests the tissue in contact with it.

Pus from a Pott's abscess or other cold non-infected abscess shows albumin to the amount of 25 to 40 gr. per liter. In purely serous exudates the figure may reach 60 or 70 gr.; but there are only slight traces of albumoses or peptones.

Histologically such pus is characterized by a very accentuated granular degeneration of all enclosed elements; different leucocytes, lymphoid and epithelioid cells of tubercular follicles, etc.

The pus of cold abscesses shows an absence of proteolytic activity which is especially due to the absence of any living elements. It is dead pus.

Chemically the differential characteristics of pus from warm and cold processes are summed up in the following table:

1. In warm abscesses, the greater part is formed of insoluble material; it shows the presence of soluble mucin and a substratum of mucoid substances; it has little true albumin; it shows the presence of albumoses and peptones; shows cellular elements constituted of neutrophile polynuclears almost unaltered; shows living leucocytes; it is active from the proteolytic point of view.

2. In cold abscesses the pus is always more or less serous; it has a noticeable quantity of albumin (25 to 40 gr. per liter); it shows only traces of albumoses and peptones; the different cellular elements are in granular degeneration; there is generally advanced polynuclear degeneration; living leucocytes are absent. The pus is inactive from the diastasic viewpoint.

The pus from cold abscesses which are fistulous and secondarily infected shows mixed characteristics; cytologically it is similar to the pus of warm abscesses, but chemically it tends toward that of a cold abscess. W. A. BRENNAN.

Millet, J. A. P., and Mueller, T.: Some Phases of Radium Action with Special Reference to the Hæmatopoietic System. *J. Cancer Research*, 1918, iii, 127.

The immediate effect of radium on the blood is an immediate drop in the total white count, which returns to the former level within twenty-four hours. There may be an occasional secondary rise in blood count. The differential count seems to run parallel with the total white count, with the exception that there is a tendency for the relative lymphocyte count to drop, and of the polymorphonuclears to rise during the course of treatment. MAX KAHN.

SERA, VACCINES, AND FERMENTS

Fleisher, M. S.: The Influence of Immune Serum upon the Reactions About Transplanted Tissues. *J. Med. Research*, 1918, xxxix, No. 1.

In earlier articles the reactions occurring about homotransplants and heterotransplants of guinea-pig kidney in immunized guinea-pigs and rabbits were studied by the author. It was noted that in homotransplants there was a slight slowing of regeneration and connective tissue formation in the first two or three days, but evidently both regeneration and connective tissue formation was the same in pieces in normal and immune animals. Leucocytic reaction and invasion was, however, in the earlier periods distinctly more marked in the homotransplants in immune animals. In the heterotransplants the regeneration was entirely inhibited in immune animals, the leucocytic reaction was more marked and the connective tissue reaction was less marked than in normal rabbits. In the heterotransplants the leucocytes invaded the tissue in immune animals very much more slowly than they invaded pieces in normal animals.

In one of the earlier papers it has been suggested that the inhibition of regeneration noted in heterotransplants might be due to factors other than the cytolysins which are presumably present in the serum of the immune animals. It was suggested that the failure of the leucocytes to clear away from the periphery of the tissue might be a factor; either the leucocytes might by some direct action prevent regeneration or they might act indirectly by inhibiting connective tissue growth and vascularization which is possibly essential for regeneration of the tubules. The delay in regeneration noted in homotransplants in immune animals at a time when the connective reaction was less marked and the leucocytic reaction more marked than in normal animals might also be interpreted as additional evidence of the influence of the leucocytes.

Because of these suggestive facts, a series of experiments was carried out in which the influence of the immune serum upon regeneration, leucocytic and connective tissue reaction was studied.

Pieces of guinea-pig kidney were transplanted into the subcutaneous tissue of the abdomen of animals, and removed and studied at various periods. At least four pieces of kidney were examined at one, two, four, five, seven, ten, twelve and fourteen days after transplantation; in many cases a very much larger number of pieces was examined.

Guinea-pigs and rabbits were injected with serum obtained from rabbits immunized against guinea-pig kidney. The rabbits had been immunized by the intraperitoneal injection of a suspension of sterile guinea-pig kidney four times at intervals of two or three days; the blood was taken from the rabbits ten to twelve days after the last injection.

The anti-kidney serum was injected into the peritoneal cavity of the guinea-pigs, in some cases simultaneously with the transplantation of the tissue, in some cases twenty-four hours before the transplantation. In some experiments as much as two cubic centimeters were injected at one time, and injections were also given on two or three succeeding days. As a rule, however, only one cubic centimeter was injected either once, twice, or three times, as it was noted that the pigs lost weight and were evidently made sick when the larger quantities were

injected. At no time were injections of serum given after the end of the first week.

As a result of these studies the author reaches the following conclusions:

In passively immunized animals about homotransplants the same reactions occur as in normal animals; about heterotransplants there is possibly a slower clearing of the peripheral portion of the tissue of leucocytes, but otherwise the reactions, even the leucocytic reactions, are like those in normal animals.

When tissue is brought into contact with immune serum for a short time before transplantation, there is possibly a slight and brief slowing of connective tissue reaction and regeneration in homotransplants. In heterotransplants there is interference with regeneration, which is, however, probably due to the interval elapsing between removal from the living animal and transplantation into the host, and also slower invasion by leucocytes.

The results of these experiments would suggest that substances in the body fluids of immunized animals have but little influence on the regeneration of transplanted tissue, and that the slowing of leucocytic invasion is in large part due to an action of the serum. The results further suggest that the more marked leucocytic reaction seen about transplants in either immune heterologous animals or immune homologous animals is a direct and independent manifestation of the immunity to the tissue. If these conclusions be correct, it appears that, in immunity to tissue transplantation, tissue reactions and especially the reactions of leucocytes play a more important part than do the reactions called forth or produced by the body fluids.

GEORGE E. BEILBY.

Mairesse, I., and Régnier, I.: Serotherapy of Gangrene of War Wounds (Contribution à l'étude de la sérothérapie gangreneuse des plaies de guerre). *Presse méd.*, Par., 1918, xxvi, 461.

The authors made a bacteriologic examination of 1,016 wounded immediately on their arrival at the surgical ambulance. Non-sporulated bacilli were demonstrated in 297, and of these 25 also showed sporulated bacilli. In all 297 carriers of the non-sporulated (bacilli perfringens) type an immediate pre-operative injection of anti-perfringens serum was made. Of these, 247 received a dose of 20 cm. and 50 a dose of 40 cm. of serum. In the case of the 25 carriers of sporulated bacilli, septic vibrion, etc., a dose of 10 to 20 cm. of anti-vibrion or anti-œdematicus serum was given in addition.

Of the total 297 treated by serotherapy, 25 developed gangrene and recovered; 5 died of gaseous gangrene. In the earlier period the authors administrated serum with a certain degree of hesitation, being fearful of complications. To this period 3 of the 5 deaths can be traced. In the other 2 the effect of the serum was apparently to mask the ordinary symptoms of gaseous gangrene. For two days these patients showed no clinical signs. The complete symptoms of massive gangrene appeared suddenly on the third day and the patients died after a few hours. Serum therefore may give a false security to the surgeon unless he is aided by a minute bacteriologic examination.

The 25 cases of gangrene which recovered received secondary doses of serum varying from 80 to 100 cm.

The complications imputable to antigangrenous serotherapy have not on the whole been many or serious. There was however one case of death which the authors think might be due to the too short interval between the first and subsequent injections.

From their experience the authors draw certain conclusions. They think that rapid bacteriologic examination on the entry of the patient gives an indication for preventive serotherapy. It will show that the anaerobic microbes introduced into the wound continue to live and are in full vitality. A large exeresis is therefore also indicated. It will also show the presence of cocci, as well as give information as to the conditions of local resistance.

The authors think that the usefulness of preventive serotherapy is sufficiently shown by the results obtained. Its systematic study should be continued, comparing the bacteriological and clinical findings. W. A. BRENNAN.

BLOOD

Hédon, E.: Notes on the Transfusion of Citrated Blood. *Med. Press*, 1918, cvi, 234.

The author recommends a four per cent solution, which is approximately isotonic, and at this strength the citrate can be simply dissolved in distilled water. He does not attach much importance to the question of percentage, because the blood is no sooner introduced into the vein than the proportion changes, and its dilution by the blood renders it inoffensive whether the solution is hyper- or hypotonic. The question of the ultimate strength is more to the point, that is to say, the proportion of citrate in the blood once the withdrawal of blood terminates. The author proposed three grammes per liter. For a man weighing 60 kilogrammes the minimum dose of citrate that could give rise to accidents would be fifteen grammes. In an exceptional case of intoxication by the citrate, its effects can be instantly checked by the injection of a small dose of chloride of calcium. There is nothing from the transfusion of citrated blood in a wounded subject to create a risk of secondary hæmorrhage, the more so since any prolongation of the coagulation period could be forthwith remedied by the administration of chloride of calcium. E. B. FREILICH.

Agote, L.: The Agote Method of Blood Transfusion (La transfusion du sang par la methode "Agote"). *Anal. d. Inst. mod. de clin. méd.*, Buenos Aires, 1918, iii, 1.

Agote states that he was the first, in November, 1914, to publish the principle of the transfusion of citrated blood and to demonstrate the innocuity for

man of the injection of blood mixed with a certain proportion of citrate of soda, as well as the preservation for a long time of the biological properties of blood when mixed with this citrate. This method is now universally practiced and it is an essentially Argentine discovery.

Many minor modifications have been made, but they only refer to points of technique and do not concern the underlying principle. While some authors, who have not apparently been fully aware of the history of the application of the method since 1914, have wrongly attributed this method to others, Jeanbrau and Hédon in France, who have most extensively used it in connection with war surgery, have fully acknowledged the claim of Agote to priority of discovery, he having been the first to apply it in a case of placenta prævia in November, 1914.

Although the procedure is a very simple one, Agote says that it is surprising how many variations can be made in the details of the technique; yet they are all reducible to a simple endovenous injection of a mixture of blood with a solution of sodium citrate. The efficacy of the method is now fully recognized and it only remains to determine the number of its possible applications. In America it has been used not only as a curative method but also as a resource preparatory to operations having a tendency to hæmorrhage.

Agote keeps this point constantly before him; each day increases the number of indications for the method, but he is not yet prepared to make any further statements on this phase.

W. A. BRENNAN.

BLOOD AND LYMPH VESSELS

Sencert, L.: Arteriovenous Aneurism of the Subclavian Vessels; Extirpation After Temporary Disarticulation of the Clavicle (Anévrisme artério-veineux des vaisseaux sous-claviers; extirpation après désarticulation temporaire de la clavicle). *Bull. Acad. de méd.*, Par., 1918, lxxx, 114.

Arteriovenous aneurisms of the subclavian vessels are rare. Sencert reports such a case in a soldier, not so much on account of the rarity of the lesion as for the operation employed for its discovery and the treatment which he believes is new, at least in France.

The man had been injured by a piece of shell which penetrated from behind frontward in the subscapular region. His condition ultimately called for the diagnosis of an arteriovenous aneurism of the subclavian vessels.

Sencert made a horizontal incision from the external third of the clavicle as far as 2 cm. beyond the right sternoclavicular articulation. At the external angle of the incision the clavicle was divided by a Gigli saw. The sternoclavicular articulation was opened at the internal angle of the incision. The cutaneous incision was then enlarged downward and outward as far as the anterior edge of the axilla, and the clavicle completely separated from the sternum. The subclavicular and substernal region was largely exposed and easily explored. The aneurismal tumor, which was in large part due to enormous dilatation of the subclavian vein, was located and dealt with in the usual manner by ligature and extirpation.

The man made a good recovery and the function of the upper limb has not suffered.

W. A. BRENNAN.

POISONS

Basset and Lechelle: The Treatment of Surgical Erysipelas by Iodine Tincture (Traitment de l'érysipèle chirurgical par l'emploi de la teinture d'iode en badigeonnage sur la peau). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 1408.

The use of iodine to combat infections of the skin or structures immediately beneath it has long been known. Sections of skin thus treated show that the iodine penetrates the epidermis and reaches pathogenic microbes deposited in the crypts of the sebaceous or sweat glands.

The authors have taken advantage of this action of iodine to combat surgical erysipelas. Although before the war the occurrence of erysipelas was quite exceptional, it is frequently seen to accompany war wounds. The authors have treated 5 cases with tincture of iodine. These were all limb cases. Not only was the involved area painted over but the entire limb was treated.

The treatment was repeated two or three times each twenty-four hours and continued until two or three days after cessation of the infective manifestations.

Tincture of iodine is rapidly absorbed, and the healthy skin shows the brownish tincture which is an index of prolonged impregnation. The high temperature falls and there is rapid improvement of the general state. The spread of erysipelas is prevented. In no case was contagion to neighboring patients observed.

The authors believe that in an uncomplicated surgical erysipelas tincture of iodine is a more distinctly curative agent than any other medicament used at present.

W. A. BRENNAN.

ROENTGENOLOGY

Bellaire, R. F.: A Few Facts in Regard to Modern X-Ray Therapy. *Minnesota Med.*, 1918, i, 380.

The author maintains that success in roentgen therapy depends on the following points: (1) the quality of rays emitted; (2) quantity of rays emitted; (3) amount of filtration; (4) distance of tube from the part; (5) time of exposure to rays.

Underdosing stimulates malignant cells and overdosing destroys healthy tissue. Atypical cells are more vulnerable to the action of the rays than are normal cells and on this fact hinges the whole field of radiotherapy. There is reason to believe that a general effect accompanies the local action inas-

much as a general improvement is frequently experienced to go on simultaneously with the local, and a lesion distant from the one under treatment may diminish or disappear.

The following conditions are amenable to roentgen therapy:

1. Cancer of the breast. Every case should be given the benefit of an early operation followed by intensive radiation. In this way the mortality and likelihood of recurrence may be reduced at least 25 per cent. Advanced cases do better and live longer when they are rayed and not operated upon.

2. Hyperthyroidism. More than 80 per cent of the toxic goiters will respond to the roentgen treatment and produce clinical cures. In all cases the chest should be rayed front and back to cover the thymic area.

3. Leukæmia. Brilliant results may be achieved, but as a rule the benefits are only temporary. Both the spleen and long bones should be rayed.

4. Hodgkin's disease. The roentgen rays are the nearest to a specific treatment ever advocated for this disease. Cases not cured will be greatly benefited, life prolonged, and symptoms alleviated.

5. Uterine fibroids. In properly selected cases 100 per cent cures may be obtained. Cases unsuitable for treatment include: (a) pedunculated fibroids, protruding through the cervix; (b) cases in which gangrenous degeneration of fibroid is suspected; (c) fibroids accompanied by carcinoma, or those having undergone sarcomatous degeneration; (d) fibroids which lead to acute incarceration of the bladder.

6. Keloids. Uniformly satisfactory results are obtained.

7. Superficial epitheliomata. Combined with the electrothermic coagulation method of Phaler, roentgenization is the method of choice.

Among other conditions mentioned which react favorably are: chronic eczemas; ring worm, particularly of the scalp; barber's itch, chronic ulcers, boils, carbuncles, psoriasis, overgrowth of hair, hyperidrosis, certain chronic fistulæ and the artificial production of sterility. Malignancies of the deep-seated viscera occasionally yield encouraging results, enough so as to warrant a trial when other measures are contra-indicated or have failed.

ADOLPH HARTUNG.

MILITARY SURGERY

NOTE.— Readers are referred to the Table of Contents for other articles dealing with military surgery which appear under the various headings according to our anatomical arrangement.

McKee, S. H.: Some Aspects of Military Ophthalmology. *Brit. M. J.*, 1918, ii, 340.

It is essential to have in a military hospital unit a specialist in the province of ophthalmology. The soldier should always have a good field of vision in each eye, and the eyes should be practically free from disease.

Unless a soldier's vision is improved considerably by glasses he is unwilling to wear them, and there is only one reason which warrants prescribing glasses to a soldier, namely, that he is thereby changed from an unfit to a fit soldier. The author considers wholesale refraction of troops and supply of glasses a grave mistake. It is a mistake to give a soldier with normal vision lenses correcting small degrees of astigmatism and hyperopia.

The author has not seen an epidemic of conjunctivitis among soldiers, and has seen very few cases of gonorrhœal ophthalmia. Trachoma has almost disappeared as a military disease. Following the gas attack in France in 1915 there were a large number of cases of conjunctivitis.

Night blindness has been seen frequently and in a number of cases has been associated with true retinitis pigmentosa; it may be due to exposure, hard work, and great fatigue.

A positive Wassermann is seen in a high percentage of diseases of the eye in military practice.

The author saw 2 cases of sympathetic ophthalmia among 3,000 ophthalmic cases.

The concussion following modern explosives leads to a great variety of fundus lesions; one of the commonest of these lesions is traumatic retinochoroiditis characterized by diffuse cloudiness of the retina, numerous small exudates in the choroid, and small dust-like opacities of the vitreous.

Dacryocystitis is not infrequently met with in military work, and the author recommends the West operation.

V. C. HUNT.

Manoury and Others: Symposium on War Surgery. (Association française de chirurgie). *Bull. méd.*, Par., 1918, xxxii, 411, 426, 436.

The twenty-seventh French Surgical Congress was held at Paris in 1918 under the presidency of Manoury of Chartres. Representatives of all the allied nations were present.

The opening address of Manoury dwelt upon the evolution of surgery during the present war. In order to explain this evolution no sensational epoch-making discovery could be pointed to; it was simply the ingenious and well reasoned application of means which have been known for a long time.

After experience in the Balkan and other recent wars, conservatism was the rule in the treatment of wounds. But early in the present war there was a reaction. Wide opening up of the wounded trajectory with extraction of foreign bodies, and the use of antiseptics in infected wounds, especially artillery wounds, became classic.

Manoury traced the growth of the use of antiseptics and the corresponding development of the aseptic method depending on a rigorous scientific basis, i.e., the bacteriological examination of the wound.

The great aim of surgery was now turned toward obtaining an aseptic condition of every wound, even the most trivial. As an indispensable condition this was seen to call for early operation before infecting agents had secured a firm footing. Wounds had to be treated within the first twelve hours, if possible, in order to obtain good results.

The earlier tendency of the war medical service based on previous experience had been to evacuate all possible major cases to rear formations after preliminary dressings at the front. Only the most urgent operations were done at the front. The newer ideas of immediate operation in all cases reversed this policy and major surgery had to be brought up to the firing line. The evacuation hospital became a completely equipped surgical unit with full personnel, laboratories, radiologic and other necessary surgical appliances, including hospitalization and rapid motor surgical ambulances.

Manoury says that the vast changes involved in this new organization of the war surgical service was perhaps the greatest medical work of the war and had the most momentous effect in the treatment of the wounded. He pays a high tribute to the work of the staff, as well as to the surgeons throughout France who shared in this work of surgical organization.

In concluding his opening address Manoury warmly eulogized the Americans and expressed his hope that after the war the intimate relations established would continue to the mutual benefit of both France and America.

The questions taken up for discussion by the congress were: (1) the treatment and end-results of gunshot wounds of the nerves; (2) the extraction of intrathoracic projectiles; (3) the surgical clearance and repair of losses of bone substance.

1. *Treatment and end-results of gunshot wounds of the nerves.* All surgeons are agreed upon the necessity of operating upon such lesions. The most formal operative indication is pain. When observed, immediate operation is generally called for and the results are generally good if the operation is early. Late operations may also give good results, but in general good results depend on early intervention.

With regard to the technique, when there is complete section of a nerve, the only possible method is to resect the nerve at both ends until healthy tissue is reached and to suture. But in the case of incomplete section there has been divergence of opinion. Moreover, Delorme showed that in cases where a nerve is more or less crushed or contused or even simply compressed, liberation has not given much better results than abstention. Since 1915 Delorme has advocated extensive resection in such cases. This at first met with much opposition, but the discussion showed that many surgeons have come to the conclusion that Delorme's conception was correct, and that in incomplete lesions of nerves, extensive resection gives the best result. The resection must be with sharp cutting instruments and suture must be with fine vaselinated silk, never with catgut. As a general rule, grafts have not given satisfaction.

With regard to results, Delagenière in 358 cases treated 236 by resection and suture, with 88 per cent of success; 9 cases of resection followed by graft gave only 3 good results; 113 cases of nerve liberation only gave a good result when the compression was simple. Forgue reported 130 cases, of which he could follow only 80. In one-sixth of his cases he got an excellent motor and sensory result; in about half, a good sensory but poor motor result; in the rest, no results. Generally the results reported by other surgeons have shown very satisfactory recoveries from resection and suture. Where there has been failure, the result can be attributed to latent infection along the nerve-trunk. Such deep infection may persist for months after cicatrization. It therefore seems necessary, in order that nerve suture may realize the best results, that such latent infection be attacked in addition to the ample excision of cicatrized nerve tissues.

The almost constantly good results obtained from suture have encouraged Delagenière to treat certain causalgias by section and immediate suture. His results were good. In similar cases Sicard and Dambrin and also Bégouin obtained excellent results from alcohol injections. This method is ineffective in the case of common neuralgic pains.

2. *Extraction of intrathoracic projectiles.* With regard to the operative indications for the extraction of thoracic projectiles, the tendency of surgeons at the front seems to be toward non-systematic primary intervention, in the case of lung projectiles, which procedure has become more and more frequent; at the rear formations, however, the tendency of surgeons is toward a secondary intervention about three weeks after the injury, reserving primary interventions for these urgent cases which force the surgeon to an immediate and extensive operation.

In the case of the heart, pericardium, and mediastinum, the projectile if small should be respected unless there are functional troubles.

With regard to the operative technique and results, no matter what the technique of extraction, it must always be preceded by a complete radiologic study by the surgeon and radiologist.

Petit de la Villeon's method of extracting small and medium-sized projectiles distant from the hilum and mediastinum by forceps under the screen through a buttonhole incision has in 301 cases given 298 recoveries and 3 deaths. Others who have followed this method have reported almost equally good results. Although the method has been criticized as a blind one, the objection does not hold in view of the constant good results.

Marion's method of pneumopexy prior to extraction has replaced costal resection to a large extent in the extraction of large projectiles from the lung region. For dangerous regions, such as the hilum, mediastinum, etc., the transpleural route is considered necessary. Le Fort however prefers the anterior or anterolateral with section of an intercostal space and resection of the adjoining cartilages. In 94 cases of mediastinal or juxtamediastinal projectiles, Le Fort's mortality was 7.4 per cent. The percentage is high because many of these were extremely difficult cases.

Generally extraction of projectiles from the heart region is benign. In 10 cases reported by Le Fort there were 9 recoveries. One patient with a piece of shell in the left auricle died four days after operation; another with a scrap of shell in the cavity of the left ventricle made a perfect recovery.

3. *Surgical clearance and repair of losses of bone substance.* Wide opening up of bone lesions, clearance of spicula, especially if detached, with primary resection as may be necessary, done as rapidly as possible, is the universal rule in war surgery. The only restrictions in the method are that it must be limited to what is absolutely necessary and that too much bone or other tissue must not be removed under the pretext of completely disinfecting the bone area.

With regard to repairing losses of bone, Duvergey condemns cavity fillings of all kinds, which he says are eliminated sooner or later.

Although a bone graft is the ideal treatment, there are many cases in which it cannot be realized. In such cases osteosynthesis is called for. In a series of 50 cases of osteosynthesis reported to the Congress by Patel, 13 of the femur, 24 of the humerus, 12 of the tibia, and 1 of the forearm, he had only one failure. Consolidation usually occurs in from two to six months. Preference ought to be given to the Lane plate or to Sherman's modification. The plate ought as far as possible to be covered with muscle and skin. According to Patel, osteosynthesis is practicable during the active period of fracture without waiting for pseudarthrosis, and it may even be done in septic conditions if the patient is not febrile.

Bone grafts should not however be attempted until several months after closure of the wound, and the area must be aseptic.

Two methods of grafting were particularly studied by the Congress, those of Albee and Delagenière. Albee's method gave Dauriac 100 per cent success and this author has abandoned homo- and heterogenous in favor of autogenous grafts, because the latter unite more rapidly by first intention. The osteoperiosteal method of Delagenière has also given excellent results. Vivier in 18 cases got 10 perfect recoveries and 6 with a slight fibrous callus which permitted almost normal function of the limb. Poupardin in 23 cases obtained excellent results. Dujarier submitted the results obtained in 106 cases of pseudarthrosis dating back one and two years. For the humerus there was 72 per cent success. In 13 cases of bone plating there were 5 failures, but the metallic wiring and Delagenière plate gave but few failures. For the radius 82 per cent success was obtained; for the two bones of the forearm, 100 per cent success; for the ulna 83 per cent and for the femur 83 per cent recoveries. The tibia gave 94 per cent successful results. Delagenière grafts in 6 cases gave 1 failure; the Albee method used in 10 cases gave 8 successes, with 2 still in treatment. The Albee method is excellent but minute; it has one drawback, namely, that the grafts may fracture secondarily.

With regard to the treatment of bone fistulæ, all agree that the best method is evacuation with free resection of the bony wall in order to permit filling of the cavity by the surrounding muscles and the neighboring superficial layers.

Several authors drew special attention to the importance of heliotheraphy in the treatment of bone lesions.

W. A. BRENNAN.

Nemirovsky, A., and Tilmant: The Radio-Surgical Aeroplane "Aerochir" (L'avion radio-chirurgical "Aerochir"). *Bull. Acad. de méd.*, Par., 1918, lxxx, 202.

The authors describe the latest addition to the French War Surgical Service, namely, the radio-surgical aeroplane called "Aerochir." This is destined to bring surgery immediately to the wounded in places where the existing accommodations are not sufficient.

Each plane carries a surgeon and a radiologist in addition to the pilot; also radiologic and surgical equipment reduced to the minimum necessary for any operation. The electrical equipment of the plane furnishes current to the radiologic services. A sterilization outfit is also included. Illustrations of this equipment are shown.

This surgical aeroplane is of particular value when an unexpected attack strikes a given point of the front and the local surgical service is overwhelmed by a large influx of wounded. The plane does not interfere with other necessary traffic to the trenches and reaches its destination with extreme rapidity. As many planes as are necessary can be sent to any place as needed, so that all the wounded may receive complete attention without delay.

W. A. BRENNAN.

GYNECOLOGY

UTERUS

Bland, P. B.: A General Consideration of Uterine Cancer, with Special Reference to Its Diagnosis. *Am. J. Obst.*, N. Y., 1918, lxxviii, 554.

Malignant disease is responsible for over 500,000 deaths throughout the world every year. In this country 80,000 persons die annually from this cause.

At forty years and upward, one man out of every twelve and one woman out of every eight die of cancer. Thirty per cent of all cases of cancer occurring in women originate in the uterus. One woman out of every twenty-seven, or about 4 per cent, die of uterine cancer.

In this country the mortality rose from 62.9 per 100,000 in 1900 to 78.9 in 1913. In studying these statistics it is interesting to observe that the North American Indian is practically immune.

About 87 per cent of all cases of uterine cancer occur between the ages of thirty-five and sixty-five. As diagnostic criteria, the local symptoms are the most dependable and, in order of frequency and importance, are hæmorrhage, leucorrhœa, pain, bladder and rectal irritability. EDWARD L. CORNELL.

Rubin, I. C.: The Pathogenesis and Further Growth of Carcinoma of the Uterus in Relation to Clinical Symptoms and Early Diagnosis. *Am. J. Obst.*, N. Y., 1918, lxxviii, 353.

The present paper is based chiefly upon the study of the material of the Schottlaender laboratory and partly on cases which the author had the privilege of studying and publishing from the same laboratory in 1900 and since then in this country.

In the traumata incidental to childbirth, there must result: (1) dislocation and inclusion of surface epithelium, and (2) eversion of cervical epithelium. Whether such heterotopic epithelium loosened from its physiological bonds and limiting membrane may, in the course of time, revert to an embryonal cell activity or whether it undergoes a qualitative biologic alteration similar to that of chorionic epithelioma, is not yet determined. Certain it is that carcinoma arises with the greatest frequency upon erosion as a base, and upon traumatized and cicatricial parts.

The cervix suffers the brunt of obstetric traumata as well as of infections, hence the greater frequency of cervical carcinoma as compared to carcinoma of the corpus. On the other hand, carcinoma of the body is most often associated with polypi or myomata. Whether the latter act primarily as chronic foreign body irritants or originate the metaplastic epithelium must also remain unsettled. Examination of a large number of cervices reveals the very striking presence of deep-seated erosion glands in the cervix. This is particularly apt to be present in the isthmus region. The fundal end of the erosion gland sometimes extends to the outer limit of the parenchyma. Biologically such glands must secrete a substance different in character from the normal cervix gland. If such a gland becomes occluded at its mouth, retention occurs and a chronic irritation results. This may lead to cell proliferation in a manner not unlike that produced by subepithelial paraffin injection (Fischer) or the repeated coal-tar application of Yamagiwa and Itchikaya. The malignant change occurs after a long period of irritation and is rendered more likely at that time of life, i.e., after forty, when the retrogressive changes set in and when the protective influence of the endocrine glands, especially that of the ovaries, begins to abate.

The deep-seated situation of such cystic erosion glands would also serve to explain the markedly endophytic character of the carcinoma from the beginning and its long concealment.

Many conclusions are noted in regard to the pathology, etiology, symptoms, and prognosis of cancer of the uterus. EDWARD L. CORNELL.

Brettauer, J.: Final Results of X-Ray Treatment of Fibroids of the Uterus. *Am. J. Obst.*, N. Y., 1918, lxxviii, 415.

At an age below forty-five, the X-ray treatment for fibroids should not be the choice, but should be employed only when operative measures are not advisable or are refused.

Between the ages of forty-five and fifty-five, X-ray treatment should be the method of choice and no patient should be deprived of the right to undergo it. With an open cervix and a distinct diagnosis of submucous development of a fibroid, operative measures promise better results. Patients with relaxation and laceration of the genital tract should be excepted. These cause no symptoms while the uterus is large and above the pelvis, but when, as a result of the treatment, the uterus becomes smaller and sinks down into the pelvis, serious inconvenience is caused and operative interference becomes necessary for its relief.

Uterine hæmorrhages due to fibroids in women beyond the age of fifty-five should raise a suspicion of sarcomatous degeneration and operative measures are preferable to any other form of treatment. EDWARD L. CORNELL.

Ill, E. J.: Observation on Fibroid Tumors of the Uterus. *N. Y. St. J. Med.*, 1918, xviii, 399.

The author gives an extremely interesting résumé of twenty-two years of operative work upon fibroid tumors of the uterus; and statistics of 529 cases, or 7

per cent of all gynecological operations performed during this period. The indications for operation were: rapidly growing tumors; pain; hæmorrhage; pain and hæmorrhage combined; pelvic incarceration; sepsis (in tumor, adnexa, abortion); sterility; complicating pregnancy; adnexal disease; ovarian neoplasms; carcinoma of the corpus uteri; sarcoma; ectopic pregnancy; normal pregnancy.

It is emphasized that a distinct indication for every operative procedure should precede the work proper and can be obtained only by careful history-taking and watching the condition often for a considerable period of time. The operations performed during these twenty-two years reflect the history of operative technique in myomata of the uterus. The total mortality was only 4.1 per cent for all types of cases, a remarkable record when one considers the early work preceded the use of rubber gloves, and the operation performed was a supravaginal hysterectomy with rubber ligature under long pins, and fixation of the stump in the abdominal wound. One or both ovaries were left *in situ* in over 72 per cent of the cases and high amputation of the cervix was done if it was deemed advisable that menstruation should continue. L. K. P. FARRAR.

Kelly, H. A.: Two Hundred and Ten Fibroid Tumors Treated by Radium. *Surg., Gynec. & Obst.*, 1918, xxvii, 402.

The only effective method of treating fibroid tumors of the uterus up to the present time has been surgical, developed with care through two generations, until the operation has become in skilled hands one of the safest of major procedures.

The author has operated in this way upon 2,000 women, but now feels that the radium treatment which is without danger and which was found effective in 93 per cent of the cases should be preferred to the operation, which is after all a major operation of mutilating character, offering considerable risk to life and health.

He states his thesis with regard to the accomplishments of radium in this class of cases as follows: (1) control of hæmorrhage and checking of menstruation; (2) shrinkage of the tumors; (3) in many instances disappearance of the tumors; (4) in some cases, even after two years, the return of menstruation, either normal or scanty. There has been no mortality associated with the treatment of 210 consecutive cases.

Between the dates of March 23, 1913, and January 8, 1918, 210 cases of uterine fibroid were treated with radium by the author and by Curtis F. Burnam and 45 cases were operated upon, either because there was some contra-indication to radium or because operation was preferred.

In 28 of these 210 cases the data are insufficient: 6 did not complete treatment, although 4 of these were markedly benefited; 7 have been lost sight of; 2 died of causes unconnected with the treatment; 13 are too early for results to be reported with certainty.

There are, therefore, 182 cases in which the results are known; in 171, or all but 11 cases, radium alone was sufficient to relieve the patient. In these 171 cases (93 per cent) the tumor is either gone or markedly diminished, or the patient is symptomatically well.

In 5 of the 11 cases, some complicating condition was present (ovarian cyst, gall-stones, calcified uterus); in 2 cases operation was preferred to further treatment; in 3 cases operation was found not to have been necessary as the tumor had decreased under treatment; 1 case proved resistant to prolonged treatment. Nine of the 11 cases were operated upon.

The fact should be emphasized that if radium fails, the operation has simply been postponed without detriment to the patient.

The technique of the treatment includes a preliminary curettage both to rule out malignancy and to remove any small polypi which may be found to exist. The average inside application is for three hours with 500 mg. of emanation. A small glass bulb is placed in the end of a metal tube, sufficiently thick to screen off all but the γ rays. This tube is screwed to a uterine sound and is then covered by a rubber cot. The cervix is dilated and the sound introduced to the top of the uterine cavity. The applicator is gradually withdrawn, not being allowed to remain longer than half an hour on each spot.

In the external treatments to shorten the time, 4 to 5 grams of radium are being used and the entire treatment can be given in from five to six hours. In any one case the treatments, internal and external, can be given individually or combined in any desired method. At least seven weeks should be allowed to elapse before a second treatment is given and it should not be given if an amenorrhœa is already obtained. Usually the second should be an external one. Some tumors reduce rapidly, others slowly over a year or more.

Menopausal symptoms are usually not severe. In 50 per cent of the cases no menopausal symptoms were complained of; in slightly more than 25 per cent they were moderate, and in slightly less than 25 per cent they were marked.

Corscaden, J. A.: Radiotherapeutic Methods in the Treatment of Uterine Hæmorrhage. *Am. J. Roentgenol.*, 1918, v, 417.

It is now well established that by proper X-ray or radium dosage a temporary amenorrhœa may be produced in women under thirty; that above that age the amenorrhœa is less certain to be temporary; and that a fibromyoma may be made to shrink to insignificant proportions. The problems are the proper selection of cases and proper regulation of dosage.

From literature and personal research, Corscaden states it is now universally believed that the dependence of the bleeding on the corpus luteum is absolute. It seems almost certain, then, that in the pathological as well as in the normal uterine bleed-

ing, some disturbance of the graafian follicle in some stage of its development, probably the corpus luteum, is the essential factor, whether this be in turn affected by other glandular substances, emotion, etc., or not. The pathological bleeding is merely a variation in amount, duration, character, or periodicity from the normal menstrual flow.

If, then, abnormal uterine hæmorrhage be nothing but a variation of the normal, and its cessation is desired, the logical procedure is to destroy the one essential element in the menstrual cycle, i. e., the graafian follicle. It has been shown that next to the lymphocyte and spermatozoa, the ripe graafian follicle is the most susceptible to the action of the X-ray and radium. It needs but a step then to apply these agents to the graafian follicle to bring about the cessation of the normal or pathological uterine flow. The ripe follicle is very much more susceptible than is the primordial follicle, and if the dose may be possibly regulated to destroy only the follicles of an advanced degree of development, then a fairly definite period of amenorrhœa could be brought about.

With the grossly pathological uterus there seem to be only four groups in which there is any peculiar relation between the hæmorrhage and the pathological change. These conditions are acute pelvic inflammation, retroversion, ulcerative conditions, including carcinoma, and fibromyoma. In the first two the causal relation is obscure; in the third, operable cases are clearly without the realm of radiotherapy.

The excessive bleeding associated with fibromyoma of the uterus cannot be treated alone, but must be considered along with the whole question of the proper treatment of fibromyoma. Before the use of roentgenotherapy the symptoms for which operation was advised were, first, excessive hæmorrhage; second, various symptoms due to pressure; and third, rapid growth or large size of the tumor mass.

The new problem is concerned with the selection of the fibromyomata which are suitable for radiotherapy, and of those cases which should be operated upon. The results to be expected from radiotherapy are cessation of the bleeding and shrinking of the growth. This shrinkage requires varying lengths of time in different cases and should receive scant consideration from the radiotherapeutist. If a mass is pressing upon any organs or if it is of extremely large size, i. e., over fifteen centimeters in diameter, and if the patient be an excellent operative risk, the mechanical removal of the mass seems the better treatment at the present stage of knowledge.

Hæmorrhage is the symptom above all others that should be treated by radiotherapy in those women in whom a permanent menopause is acceptable. In younger women, radiotherapy becomes less satisfactory because in them the menopause symptoms must be considered unsatisfactory even if they do not in any way incapacitate. Radiotherapy in this class of patients should be reserved for those in whom an operation is contra-indicated, being particular, however, to raise the standard of operability and to pay stricter attention to contra-indications which would, in the days before radiotherapy, have been considered negligible.

Among the author's conclusions are the following:

X-ray or radium, depending on the dosage, destroys the graafian follicles, affecting the fully developed more than the primordial, and thereby causes the uterine flow to cease.

The uterine flow is made to cease in the same manner even if it is associated with gross changes, such as retroversion and fibromyoma.

In functional menorrhagia and metrorrhagia in women near the menopause, radiotherapy is the method of choice, while in younger women it should be used with caution.

Fibromyomata shrink, and the uterus ceases to bleed after proper radiotherapy. Cases should be treated only when giving symptoms. Those tumors occurring in women in whom a menopause is acceptable are proper subjects for radiotherapy, if pressure symptoms are not severe, if the mass is not rapidly growing, or if it is not of excessive size. The menopause should be permanent.

The presence of carcinoma of the uterus should be excluded before treatment of any kind is given for uterine bleeding in women over thirty, whether a fibroid be present or not. D. R. Bowen.

ADNEXAL AND PERIUTERINE CONDITIONS

Osborne, O. T.: Ovary; Corpus Luteum. *N. Y. M. J.*, 1918, cviii, 447.

Just how much the activities of the ovaries may be stimulated by feeding preparations of the ovaries is difficult to determine, but many times the precipitated menopause symptoms of ovarian extirpation are largely ameliorated by ovarian extract.

These disturbing symptoms are vasomotor disturbances, hot flashes, head flushings, indigestion (perhaps due also to circulatory disturbance), the addition of weight mostly in the form of fat, sometimes nervous irritability, sleeplessness or the reverse, i.e., unusual daytime drowsiness and mental sluggishness. How many of these symptoms are due to loss of ovarian secretion, or to the sudden cessation of menstruation without pregnancy and consequently a storing in the system without physiological need of the nutriments and salts of the blood which were previously lost, has not been determined, but both are factors in the condition. The normal menopause or the cessation of menstruation without pregnancy at a younger age will cause more or less symptoms, and ovarian feeding may markedly improve the condition.

The author considers the use of ovarian extracts in the following conditions: (1) after extirpation of the ovaries; (2) for menopause symptoms, especially when the onset is abrupt; (3) for too slowly developing girls; (4) when there is an apparent subsecretion of the ovaries in older girls and women,

especially when a long course of treatment is necessary; (5) in menstrual disturbances. He discusses the results obtained. He also records his results in the use of corpus luteum in: (1) amenorrhœa; (2) overweight; (3) dysmenorrhœa; (4) pregnancy; (5) menopause cases.

Total removal of both ovaries is only justifiable in very rare instances.

It is unimportant whether it is the ovarian substance or the corpus luteum that furnishes the secretion that is most necessary for the mature woman's mental and physical health; it is a fact that many internal secreting glands are disturbed by the removal of the ovaries. Total removal of the ovarian tissue before puberty stops the development of the genital organs and of the breasts. Total removal after puberty stops menstruation, causes artificial menopause, and multiplies the menopause symptoms and disturbances. The younger the adult woman so castrated, the more serious are the symptoms. Castrated women are often left in a serious mental and physical condition. Feeding these sufferers ovarian and corpus luteum extracts is only partially successful in ameliorating their condition.

The rules for operation for tubal and ovarian disease should be:

1. As much of the ovaries as are found healthy should be left.

2. If the operation of necessity destroys the circulation and therefore nutrition of the whole of both ovaries, large grafts from the healthy part of the ovaries should be placed in some location that will allow the ovarian tissue to readily obtain a blood supply and therefore live. If the ovarian transplant lives and functions, it should be remembered that it periodically swells, and hence, in tense, non-dilatable tissue, may cause severe pain. The uterine wall, the peritoneum, the labia majora, the mons veneris, the abdominal wall, and even the axilla have all been suggested as regions for implantation.

3. If there is no healthy ovarian tissue for autografting, since total extirpation of both diseased ovaries is not an emergency operation, the surgeon connected with a large hospital generally could obtain a piece of healthy ovary from a non-syphilitic and non-tuberculous patient for transplantation into the woman to be castrated. The necessity for obtaining such ovarian tissue would be rare, as total extirpation is rarely needed. Of course the surgeon cannot decide that there is no healthy ovarian tissue until the time of the operation, but he should be prepared for such an emergency when there is a probability of the necessity of total extirpation. Ovaries removed from healthy women after sudden accidental death, and properly preserved, would seem to be ideal tissue.

If these engrafted ovaries or ovarian tissues live and function, it may be two or three months before the fact is known by any symptoms or signs in the patient. The signs of success are a general feeling of health, absence or diminution of menopause symptoms, and menstruation. Such grafts may live for a time and then die, but more or less embryonic ovarian tissue may have had time to mature and to begin to furnish the secretion so much needed by the patient.

Properly selected patients, who have had their ovaries removed for disease and who have psychoses which are not cured by the administration of organic extracts, might well be treated by grafts of healthy human ovarian substance. GEORGE E. BEILBY.

MISCELLANEOUS

McCann, F.: Recent Progress in Gynecology. *Practitioner*, Lond., 1918, ci, 194.

This article deals with a brief discussion of the relation existing between the action and interaction of certain of the ductless glands and the various uterine and ovarian functions. The ovaries, corpus luteum and the posterior lobe of the hypophysis exercise control over the uterus and adnexæ. There is a definite interaction between the ovarian, corpus luteum and the menstrual decidua secretions and the hypophyseal secretions. In all probability many cases of excessive pain and uterine contractions during menstruation, resulting in dysmenorrhœa, are due to excessive activity of corpus luteum. When one considers the influence of the secretions of the ovaries and the corpus luteum, with their tendency to produce dilatation of the cerebral vessels, the swelling of the thyroid gland with a probability of frequent temporary hyperthyroidism, and the changes in the posterior lobe of the hypophysis at menstruation, it is apparent that a sensitive or unstable relation of these glands may cause days of suffering prior to each menstruation, which is entirely apart from the distress of dysmenorrhœa.

The phenomena of labor and menstruation are essentially the same in kind. Menstruation has been left in abeyance for the period of pregnancy by the presence in the uterus of the placental gland. The normal menopause with ovarian retrogression is usually attended by coincident alteration in the thyroid and hypophysis. Failure of the glandular interaction offers a plausible explanation for the nervous phenomena often occuring during the menopause. Altered ovarian secretion, as evidenced by menstruation, is an indication of altered glandular interaction.

Lactation amenorrhœa is due to the mammary gland secretion, a hormone secreted as a result of the stimulus of suckling and which antagonizes the corpus luteum. A persistent thymus is associated with hypoplastic ovaries, while early retrogression of the thymus results in large hyperplastic ovaries. Bandler therefore recommends the administration of thymus for persistent menorrhagia of young girls. On theoretical grounds the use of placental extract has been suggested for menorrhagia and would seem to be indicated because of its antagonistic action on the ovary, pituitary body, and the adrenals. These extracts, valuable as they may be, should not be used to the exclusion of other remedies. C. D. HOLMES.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Rhodes, F. A.: Diagnosis of Ectopic Pregnancy. *Am. J. Obst.*, N. Y., 1918, lxxviii, 580.

Of 20 ectopic pregnancies, three were diagnosed correctly as unruptured tubal pregnancies. One wrong diagnosis proved to be a ruptured tubal; on account of sudden pain in the right pelvis, followed by vomiting, with a temperature of 100°, the case was diagnosed as acute appendicitis. The appendix was also much inflamed. In this case sufficient attention was not paid to a missed period and little bleeding.

Nineteen of the ectopic cases had pain; nineteen had irregular bleeding; fourteen had missed one or more periods; three could not tell. All had an elevation of temperature ranging from 99° to 101° F., and a pulse rate of 90 to 140; five had vomiting; fifteen showed a definite mass; about one-half had enlargement of the uterus; and very few thought they were pregnant.

Of the fourteen non-pregnant cases, thirteen had pain; twelve had uterine bleeding; eight had missed their regular period and four were irregular; thirteen had some elevation of temperature and increased pulse-rate. In all but one of these cases the author was satisfied before operation either that the patient did not have ectopic pregnancy or that it was questionable. EDWARD L. CORNELL.

Strickland, C. G.: Cæsarean Section in Eclampsia. *Penn. M. J.*, 1918, xxii, 8.

In this article the author discusses briefly some general conditions of eclampsia and the value of the treatment of the condition by employing cæsarean section as the method of choice in a rapid delivery.

It is obvious that eclampsia is a toxæmia, and while a definite type of poisoning whose point of origin is not known, pregnancy is its fundamental cause. While painstaking and unremitting care of all obstetrical cases will accomplish great good, there will always be some women whose metabolism is not equal to the added strain of pregnancy and who will go on to the development of convulsions.

A generation ago, it was thought that sedative and expectant treatment should be instituted, while now rapid delivery and active elimination are proper. Conservative measures have their place. In multiparæ, rupture of the membrane and a possible phlebotomy are often all that are required. In primiparæ the problem is more complicated. If labor is well under way and the dilatation is progressing, a bag followed later by forceps may be considered. Instrumental or manual divulsion of the cervix is attended by too great a mortality and morbidity. Vaginal cæsarean section is not easy of performance in primiparæ. In this type of cases, cæsarean section is the method of choice, for the following reasons: (1) It is the most rapid method of delivery; (2) with an undilated cervix, it is often the safest and cleanest method of delivery; (3) through the operative bleeding, which is free, it accomplishes the purpose of phlebotomy; (4) it leaves the pelvic floor intact.

As this operation can be completed in from 30 to 35 minutes, which is less than the average time for delivery by manual dilatation and version, it requires the use of less anæsthetic. The bleeding is also under better control.

High mortality comes from late operations and from infections prior to operative interference. Ether is the anæsthetic of choice, as chloroform produces an added strain on the heart muscle and the pathology of chloroform poisoning is similar to that of eclampsia. Local anæsthetics are contraindicated on account of the inability to get the desired lack of freedom from the convulsion during the operation. C. D. HOLMES.

Castano, C. A.: Utero-Abdominal Abortion (Aborto útero-abdominal). *Semana méd.*, Buenos Aires, 1918, xxv, 149.

A woman of twenty-four underwent a right oophorosalpingectomy for cystic ovaritis. Some months after recovery she returned to the hospital with symptoms which, in conjunction with her previous history, pointed to peritoneal suppuration due to appendicitis or some similar lesion. On operation the uterus was found covered by omentum and a tumor developed at the site of the right cornua. The tumor consisted of the stump of the right tube surrounded by an encysted hæmatoma.

On clearing the coagulum, the uterine orifice was evident. Loose in the pouch of Douglas, in the midst of coagulum, a small ovum was found intact. The uterine breach was sutured and the appendix removed. Apparently an angular pregnancy had occurred in the right uterine cornua and very probably in that part where the tube had been sectioned. A rupture was subsequently produced, the ovum expelled into the abdomen, and a hæmatocele formed about the tubal stump.

W. A. BRENNAN.

Norris, R. C.: Indications and Limitations for the Induction of Labor. *Am. J. Obst.*, N. Y., 1918, lxxviii, 507.

With an experience of several hundred cases of induced labor, it is the author's conviction that the termination of a pregnancy after fœtal viability for grave systemic diseases of the mother associated with pregnancy, for diseases or accidents of the

product of conception, and for serious disproportion in size between the fœtus and the pelvis is becoming more and more restricted to an ever-decreasing proportion of cases. There remain, however, several important indications for which it should be more frequently used.

In the last 5,000 consecutive deliveries at the Preston Retreat, labor has been induced 140 times (2.8 per cent) for the following indications: pelvic deformity, 83 cases; toxæmia of pregnancy, 36 cases; prolongation of pregnancy, 15 cases; goiter (exophthalmic, 1 case; grave cardiac disease, 3 cases; acute hydramnion, 1 case; fœtal death, 1 case. There has been no maternal mortality.

Labor should never be induced in a pelvis with a conjugate less than 8.5 cm., and this minimum should be accompanied by a small child. Instrumental delivery after inducing labor should be avoided if possible and always delayed until the head is well fixed and moulded.

Induced labor yet has a distinct field of usefulness for pelvic contraction, but it should be restricted to conjugates above 8.5 cm. and most frequently to multiparæ with histories of difficult labors and lost babies. Primiparæ with conjugates below 8.5 cm., unless the fœtus is distinctly undersized, are best treated by cæsarean section. The proportion of cæsarean sections has increased for the higher grades of pelvic contraction and the induced labors have increased for the lesser degrees.

Induction of labor for prolongation of pregnancy is one of its most valuable uses. Primiparæ with moderate pelvic contraction or with normal pelves with floating heads at term, especially if the position of the vertex is posterior, comprise a class of patients that has offered the most frequent indication for this operation, and its results have always been most satisfactory.

It is always desirable to induce labor, after the period of viability, in advance of the period at which habitual fœtal death has previously occurred.

Induction of labor after viability of the child has come into competition in recent years with abdominal delivery. There are many arguments on both sides of this question. The application of cæsarean section to separation of the placenta, prævia or normally situated, will soon find its proper place, which will be a less restricted indication.

Excluding mechanical obstacles by pelvis or fœtus, the limitations of induced labor are described by one word, speed. One must have a wide experience with the results of slower methods to correctly judge the necessity for speed.

EDWARD L. CORNELL.

Menten, M. L.: A Positive Wassermann Reaction Which Changed to a Negative at the Termination of Pregnancy. *Am. J. Obst.*, N. Y., 1918, lxxviii, 514.

During the course of some experiments on blood from women, it was occasionally observed that the serum from the same woman would, within a very short interval of time, give quite dissimilar reactions. Following delivery the blood rapidly lost its property of giving a positive Wassermann, and the only factor which might account for this difference was parturition.

The total number of consecutive cases of mothers' blood examined was 357, of which number 48, or 13.45 per cent, were found to be positive. Of these 48 positive cases, 16 of the corresponding cord bloods gave positive reactions. In 2 babies, whose mothers' blood was negative, the sera of the cord blood was positive.

In 26 of these patients with positive reactions, blood was withdrawn for subsequent examination at periods varying from twenty-four hours to two weeks after parturition. No postpartum blood obtained later than two weeks after delivery was examined. In the sera of 12 of these, no appreciable alteration in the quality of the positive reaction could be detected, while in the remaining 14, negative reactions were present.

Microscopic examination of the placentas of these 26 positive cases revealed in all fairly extensive pathological changes. The villi showed various degrees of endarteritis and endophlebitis with a marked increase in the stroma cells. The proliferation of the connective tissue was in some areas so intense that the lumina of the vessels were obliterated.

The blood of pregnant women giving an antepartum positive Wassermann frequently shows a negative reaction when the postpartum blood is examined.

EDWARD L. CORNELL.

McConnell, E.: The State and Prenatal Hygiene. *Brit. M. J.*, 1918, ii, 365.

The author calls attention to the lack of systematic antenatal care of pregnant women in general. In Glasgow, Scotland, for example, the death rate for the first four weeks of life was for three years (October, 1909, to September, 1912) 45.33 per 1,000. This fact alone illustrates the vast scope of the work to be done by an organized system of antenatal care. Stillbirths and deaths from immaturity, although the most tangible sources from which illustrations may be drawn, very inadequately represent the total volume of life lost during antenatal states, and therefore must not be taken to represent the true state of affairs.

The problem of child life is, however, only one part of the subject of antenatal care, for conditions of the mother during the pregnant state frequently cause, not only the death of the mother, but of the fœtus as well.

The author concludes by stating that it is the distinct duty of the state to more adequately look after the maternity question, both prenatal and postnatal, and insure those less fortunate pregnant women the same medical skill and nursing facilities that are accorded their more fortunate sisters who have means with which to purchase service.

HARVEY B. MATTHEWS.

LABOR AND ITS COMPLICATIONS

Sullivan, R. Y.: Rupture of the Uterus. *Am. J. Obst.*, N. Y., 1918, lxxviii, 589.

The widened field of cæsarean section increases the danger of rupture of the uterus and should be restricted more than it is at present for cases of mechanical disproportion and urgent emergencies.

By its therapeutic action, pituitrin tends markedly toward rupture of the uterus and should therefore be withheld until the head is in sight and never used in cases of disproportion nor in the first stage of labor.

Adequate study of all obstetric cases before labor will greatly reduce the frequency of uterine rupture by instituting appropriate operative treatment in cases complicated by tumors, overdistended uteri, oversized child, and diseased uteri.

Internal pelvimetry is the guide to safety in disproportion.

Intensification of the management of obstetric work, especially in the selection of proper surroundings, will allow serious emergencies to be handled without embarrassment.

EDWARD L. CORNELL.

PUERPERIUM AND ITS COMPLICATIONS

Zarate, E.: Puerperal Uterine Gangrene (Gangrena uteri puerperalis). *Semana méd.*, Buenos Aires, 1918, xxv, 439.

Puerperal uterine gangrene is very rare. It was first described by Danyau in 1828 under the name of gangrenous metritis. The most notable report of cases has been made by Beckmann, who observed 12 personally in Petrograd and collected 28 among other Russian authors. It was he who suggested the name of puerperal gangrene.

The case now reported by Zarate is the first met with in Spanish-American literature. The reason why 90 per cent of these cases are observed among Slavic peoples is by no means clear. It may be that in other countries it passes unperceived or is wrongly interpreted.

Clinically puerperal uterine gangrene begins insidiously, without chills or fever; the pulse alone attracts attention. Lochia becomes dark and coffee-colored, the uterus shows no tendency to involution, remaining large, hard, and sensitive; after a while the lochia becomes purulent and yellowish; sometimes there is perineal œdema and infiltration of the labiæ majoræ. About the third week of the puerperium the odor and secretions have become extremely fetid and this only disappears with the expulsion of a slough of uterine muscle of foul odor. Favorable reactions then occur, as a rule; but a fatal peritonitis may be evoked by perforation.

The dimensions of the uterine slough vary from 10 to 15 cm. wide to 7 or 10 cm. high, and the thickness varies between some milimeters and 2 or 3 cm. It consists of muscle tissue, connective tissue, and vessels.

The pathogenesis of this rare and severe complication of the puerperium is not clear. According to Beckmann and others the streptococcus is the provocative agent; but syphilis, diabetes, etc., have also been considered as contributory. Caustic intra-uterine antiseptic injections have produced necrosis experimentally. The author thinks that the condition is due to the presence of a streptococcus associated with some anaerobes such as the perfringens, which by their combined action, weaken and destroy the defense reactions of the uterine muscle fibers.

The diagnosis of this infection is not difficult when the clinical picture is known; but some authors think that a diagnosis cannot be established without the escape of sloughs.

The prognosis depends on the intensity of the affection and its complications. According to Beckmann, the mortality is about 28 per cent due to perforation and septicæmia. The elimination of uterine sequestra is for some authors an indication for hysterectomy; the author thinks that such a radical procedure can only be justified on very clear-cut indications of perforation.

In the author's case the woman was para-IX. All births were premature and required artifical delivery. The woman was a syphilitic. The sloughs were eliminated on the twentieth day, after which recovery was normal.

Details of the histologic examination of the uterine sloughs are given; and from its study the author concludes that the explanation of the mechanism of the process must be sought in the elective action of associated microbes on the connective fibers.

W. A. BRENNAN.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Spooner, L. H.: The Bacteriology of Tuberculous Kidneys. *J. Med. Research*, 1918, xxxix, No. 1.

For years a popular belief has existed that the septic manifestations of tuberculosis were due to a mixed infection with pyogenic organisms; that cavities containing caseous and purulent material resulted from the action of such organisms. Leucocytosis in connection with tuberculous infection was supposed to result from this same mixed infection, though at the present time Sahli is beginning to see light when he states that the degree of such a leucocytosis is due to the intensity of the tuberculous process, rather than to invasion by any other micro-organisms.

The positive proof of the existence or non-existence of mixed infection in tuberculous processes can be obtained only by a careful bacteriological examination of such lesions. Such a study in pulmonary processes is unsatisfactory for two reasons: (a) because all such procedures must be conducted after death; and (b) since abscess cavities in most instances communicate with the upper and outer respiratory passages, which are normally the habitat of a large bacteriological flora.

For this reason the kidney has been selected, since it is so readily removed and can be studied more nearly in its normal state.

It is a well recognized fact that the postmortem presence of organisms has a far different significance from such findings in living tissues. Young reports the postmortem finding of a small caseous cavity in a kidney presenting coccus infection.

It is reasonable to expect old areas of tuberculosis to exist in tissues which subsequently become the seat of other infectious processes. It is also to be expected that in some instances an acute non-tuberculous infection may occur in the presence of an active tuberculous one; but it is the purpose of this paper to consider, not the abnormalities of diseased processes, but to demonstrate how far mixed infection enters into the tuberculous process, and what clinical diagnostic significance any such infection may have.

The author reaches these conclusions:

1. The tubercle bacillus can be cultivated in pure culture from tuberculous kidneys.
2. In ten kidneys examined, positive results were found in fifty per cent of the cases.
3. Dorset's egg medium is the most satisfactory for primary growth.
4. With this medium, only forty per cent of the inoculated tubes showed growth in the positive cases.
5. Five per cent glycerine agar is the most satisfactory medium for secondary cultivation.
6. In no instance was there any evidence either in the kidney or the ureteral urine of mixed infection.
7. Tuberculous caseation and suppuration is due to the activities of the tubercle bacillus alone.
8. Non-tuberculous infection of the kidney is produced by one or more organisms which are always isolated from the renal tissues, or from the ureteral urine, and which grow readily upon simple culture media.
9. The clinical diagnosis of renal tuberculosis is suggested by the presence of acid-fast bacilli in the urine. If a pus-containing urine, obtained from the ureter, shows no growth upon simple culture media after forty-eight hours' incubation, another very important link is added to the chain of diagnosis of tuberculosis of the kidney. GEORGE E. BEILBY.

MacNider, W. DeB.: A Study of the Acid-Base Equilibrium of the Blood in Naturally Nephropathic Animals and of the Functional Capacity of the Kidney in Such Animals Following an Anæsthetic. *J. Exp. Med.*, 1918, xxviii, 501.

As a result of the observations of Ophuls, Pearce, and Dayton, the fact is generally known that many of the lower animals, particularly the dog, are susceptible to a type of kidney injury which should be classed as a chronic nephropathy. In a recent study of the naturally acquired chronic nephropathy of the dog, these earlier observations have been confirmed, the various nephropathic processes have been classified, and a consideration of the processes of repair in the kidneys has been undertaken.

In this study of 42 naturally nephropathic animals the author found it possible, with three exceptions, to classify the kidney injury as a chronic productive type. The three remaining animals showed the typical arteriosclerotic type of kidney with extensive general sclerosis of the vessels. The thoracic aorta in one of the animals was the seat of a fusiform aneurism. In most of the kidneys of the remaining 39 animals the formation of connective tissue was a focal process confined to the glomeruli. In all the animals both the capsule and capillaries of the glomeruli participated in the laying down of connective tissue so that in the different animals it was not possible to specialize the glomerular pathology into a capsular and intracapillary glomerulonephropathy. Hyaline degeneration of the fibrosed capillary tufts was occasionally observed.

The formation of intertubular connective tissue in the kidneys of these animals has shown no parallel with the degree of fibrosis which has taken place in the glomeruli, and furthermore, there has existed a notable disproportion between the severity of the changes in the glomeruli and the degree of degenera-

tion of the tubular epithelium. This observation has been recently confirmed by Stengel, Austin, and Jonas in a study of the chronic nephropathies in human material.

The following investigation has been undertaken with the object of ascertaining the difference in the response of the normal and naturally nephropathic kidney to Grehant's anæsthetic, the principal anæsthetic ingredient of which is chloroform. The study embraces an investigation of the acid-base equilibrium of the blood in these two groups of animals, prior to and during the period of anæsthesia, and the association of the changes in this equilibrium with the development of an anuria. The functional capacity of the kidney has been determined by the phenolsulphonephthalein test, the retention of blood urea, and the response of the kidney during the period of anæsthesia to various diuretic substances. Finally, the relative toxicity of this anæsthetic for the normal as compared with the naturally nephropathic kidney has been investigated by a histological study of the kidneys at the termination of the experiments.

Dogs were employed in these experiments. Nine of the animals were healthy, varying in age from three years to thirteen years and one month.

An analysis of the experiments which have been presented in this study shows that animals may have a severe type of chronic kidney injury that is largely localized in the glomeruli without developing an acid intoxication which can be detected by a depletion in the alkali reserve of the blood or by a reduction in the tension of alveolar air carbon dioxide. These animals show a slight retention of blood urea and a moderate reduction in the output of phenolsulphonephthalein. The minimum output of the dye in a two-hour period for the naturally nephropathic animals has been 52 per cent. The kidneys of these animals show an epithelial element which is well preserved histologically and does not show any acute degenerative change.

When these animals are anæsthetized, their response to the anæsthetic as compared with normal animals shows the acid-base equilibrium of the naturally nephropathic animals to be clearly unstable, for these animals rapidly develop an acid intoxication, while the control animals maintain their normal acid-base equilibrium. Furthermore, when the acid-base equilibrium of these naturally nephropathic animals is only slightly altered in the direction of an accumulation of acid ions, the animals become anuric and fail to respond to a variety of diuretic substances.

In the control animals which are able to maintain their normal acid-base equilibrium during the period of anæsthesia, these diuretic substances induce a marked increase in the formation of urine. The development of the anuria by the nephropathic animals during the period of anæsthesia which coincides with the occurrence of the acid intoxication has been constantly associated with an acute degeneration of the convolution tubule epithelium and without the development of any acute injury to the vascular tissue of the kidney.

From these experiments it would appear that in the naturally acquired kidney injury of the dog in which the chronic pathology is largely confined to the glomeruli, the injury is not due to an acid intoxication. The experiments furthermore show that when such a kidney is subjected to an agent which leads to the formation and accumulation in the blood of acid bodies, the epithelium rapidly degenerates, and that with this degeneration the functional capacity of the kidney is arrested.

From the experiments as stated above the author draws the following conclusions:

1. The naturally acquired chronic glomerulonephropathies of dog are not due to an acid intoxication.

2. Such an injury renders the acid-base equilibrium of the animal unstable and susceptible to an agent such as an anæsthetic which tends to induce an acid intoxication.

3. When naturally nephropathic animals are anæsthetized by Grehant's anæsthetic, the principal anæsthetic ingredient of which is chloroform, the animals develop an acid intoxication and become anuric and non-responsive to diuretic substances.

4. The development of the anuria has been constantly associated with swelling, vacuolation, and necrosis of the convoluted tubule epithelium.

5. In the kidneys of these animals there occurs an accumulation of fat which is largely confined to the ascending limbs of Henle's loops and which shows a quantitative relation with the degree of acid intoxication. GEORGE E. BEILBY.

Rochet: Treatment of War Traumatisms of the Kidney and of the Ureter at Base Hospitals (Conduite à tenir vis-à-vis des militaires atteints de traumatismes des reins et de l'uretère à l'arrière). *J. d'urol.*, Par., 1918, vii, 337.

Rochet's report was presented to the third conference of the Directors of the French Urological Centers, and was mainly statistical.

1. *Contusions of the kidney.* The end-results have generally appeared benign. Of 39 cases, 15 completely recovered without sequelæ, under rest and medical treatment; 7 still have pains in the contused kidney and minor disabilities; 6 show some persistence of hæmaturia; 2 have had a nephritis on the affected side. No old cases of contusion demanded operation for any kidney complication.

2. *Wounds of the kidney.* Eighty-five unilateral wounds were observed by the author and others. Wounds of the kidney are benign if the organ is only grazed tangentially or simply traversed. They recover easily without appreciable inflammation or pain. It has been remarked that in some cases where the kidney at time of traumatism was young and healthy, the reaction of the parenchyma was so great that the functional result was better than in the healthy kidney. Besides, a nephritis occurring under such a condition is generally limited and does

not necessarily result in total and progressive degeneration of the gland. Among the end-results in this series of cases there were: 9 cases with persistent local suppuration; 5 with urinary fistulæ; 7 with persistent sharp pains and painful movements; 2 with hæmaturia; 13 with pyelitic infective complications; 9 with nephritis; 2 with albuminuria; and 2 with secondary calculi. No case of renal tuberculosis was seen which could be referred to the traumatism. Neither was there any case of true or false hydronephrosis. In this series of cases operations were only necessary as follows: 5 times for purulent fistulæ; 3 times a secondary nephrectomy for urinary fistulæ, and 1 nephrotomy for pyonephrosis. Fifteen extractions of projectiles included in the kidney had to be made. Medical treatment sufficed in all other conditions.

3. *Wounds of the ureter.* The author has only been able to find 5 genuine cases, although several probable cases have been reported. In all 5 cases the only treatment has been nephrectomy, which always gave recovery without compromising the function of the other kidney.

It is seen from the results that but few of these patients arriving in the base hospitals need a secondary operation. Either the condition recovers spontaneously or the primary operation done at the front suffices.

In the discussion which followed this report, the following comments were made:

Uteau thought that nephrectomy should be systematically practiced in pyelonephritis following war wounds rebellious to the usual treatment.

André thought that in urinary fistulæ, even if persistent, one should be slow to do nephrectomy if the kidney was not infected and if there was an appreciable functional value.

Cathelin thought that at the front nephrectomy ought to be done only exceptionally. Both at the front and rear formations conservative surgery should be the main aim.

Marion had seen 5 ureteral wounds. While such wounds may be very grave and give rise to severe complications leading to pyelonephritis or pyonephrosis and require a nephrectomy, yet in certain cases there may be a *restitutio ad integrum*. One of the important factors in recovery is perfect drainage of the wound.

Legueu thought that at the front abundant hæmorrhage is an indication for nephrectomy; but that issue of urine through the wound is not in itself a sufficient indication. In the rear hospitals, however, persistent flow of urine through the wound is generally an indication for nephrectomy. Foreign bodies in the kidney should always be removed. Legueu is dubious concerning the existence of the so-called traumatic nephritis following war injuries.

Pousson differed from Legueu as regards traumatic nephritis. He is quite satisfied concerning it from the evidence, and thinks it may exist not only in the traumatized but also in the other kidney.

Pasteau favored conservative surgery as regards the kidney, both at the front and rear formations. Outside of abundant hæmaturia which persists, purulent transformation of the kidney, or cases where the kidney does not show any functional value, nephrectomy is generally contra-indicated in traumatisms. W. A. BRENNAN.

Hepburn, T. N.: Kidney and Ureter Abnormalities. *Ann. Surg.*, Phila., 1918, lxviii, 294.

The author reports two interesting cases, one of fused ureters, the other bilateral double kidneys, pelves, and ureters.

The first case was a married woman, aged thirty-one. She had had eight full-term pregnancies. Her present illness dated back four years, when pain in the right renal region began.

Examination showed a well-nourished, vigorous-looking woman, evidently in pain and acutely ill. In the region of the right kidney was a large tender tumor. The urine was full of pus, temperature 103°, and leucocytes were 24,200. X-ray showed the indefinite outline of a large kidney. Cystoscopy revealed the right ureteral orifice slightly dilated and ejaculating very purulent urine. Catheterization of the right ureter was stopped 3 cm. up.

A diagnosis of right pyonephrosis was made. The left kidney was normal. The right and left ureters were fused.

The first operation was done under ether anæsthesia. The right kidney was exposed and found to be greatly infected; it was quickly removed. The ureter was carefully dissected down for three inches, so as not to ligate below its fusion with the left side, and tied with No. 2 chromic catgut.

The patient made a very rapid recovery, but the wound continued to drain pus. Chromoscopy with indigocarmine revealed the same dense ejaculations of purple urine from the single ureteral orifice on the right side. It also appeared in the urine from the right lumbar wound.

At the second operation a midline suprapubic incision was made and the peritoneum peeled from the bladder, thus exposing the bladder end of the ureter more easily. The fusion with the left ureter was found just outside the bladder wall. The right ureter was ligated close to the fusion and the wounds closed. The woman made a quick recovery.

The second was a woman aged forty-five years. Her present illness dated back many years as a pain in the right side.

Examination showed a rather thin woman with an easily palpable tumor in the upper right abdominal quadrant which extended back over the right iliac fossa and anteriorly one inch beyond the midline. The urine contained much pus. The temperature and leucocyte count showed moderate elevation. X-ray showed the indefinite outline of a large right abdominal tumor. Cystoscopy showed on the right side two ureteral openings, 2 cm. apart, one above the other. From the lower opening purulent urine could be seen to come; two ureteral openings were

found on the left side, and were each catheterized with No. 6 F leaded catheters.

The right upper catheter drained freely a very purulent urine. The right and left lower catheters brought normal urine. Differential renal function was done by the injection intravenously of 0.6 mg. of phenolsulphonephthalein which was excreted as follows: from the right upper catheter not at all, and the remaining right lower, left upper and left lower catheters in six minutes and in fifteen minutes 5 per cent.

Fifteen per cent thorium was inserted into each catheter by gravity and an X-ray picture taken which demonstrated a duplication of ureters and pelves on each side.

The diagnosis was bilateral double kidneys, pelves, and ureters, one of the right kidneys being pyonephrotic.

Under ether anæsthesia the right kidneys were exposed; the large upper pole of the tumor so enveloped the lower normal kidney that it seemed dangerous to try to separate them. Therefore the pyonephrotic upper kidney was removed with the lower normal kidney *en masse*. The wound was closed without drainage and the patient made a quick recovery.

In the original article there is a diagram of the fused ureters and an X-ray of leaded catheters and 15 per cent thorium injections showing bilateral duplication of kidneys, pelves, and ureters.

THEO. DROZDOWITZ.

Brunnick, K. F. C.: A Bacteriological Study of Seventy Cases of Urinary Infection, with Special Reference to Pyelitis. *Med. J. Australia*, 1918, ii, 23.

The cases include pyelitis, cystitis, infection following catheterization for retention of urine after abdominal and pelvic operations, and during typhoid and paratyphoid fevers, tenanus, cerebral hæmorrhage; also infection following prostatectomy, nephrectomy, renal and ureteral calculi, and several cases associated with a leucorrhœal discharge. All the urines examined were sterile catheter specimens.

In 68 specimens of urine, 25 different types of Gram-negative bacilli were found; 6 specimens contained combined infections of two or more organisms. Staphylococcus pyogenes aureus and staphylococcus pyogenes albus were found to be the infective agents in the remaining 2 specimens, each in pure culture.

The organisms were classified according to their motility, fermentation reactions, indol formation, and their action on gelatine and litmus milk. The majority of the organisms came under ten groups, the remainder only being found once. The type corresponding to bacillus coli was found in 20, bacillus acidi lactici (Huppe) in 16, and bacillus lactis aerogenes in 7.

One is struck by the diversity in the organisms infecting the urine, but when it is realized that infection is caused in some instances by contamination with fæcal matter, it is more easily understood.

The great variation in organisms also explains the unsatisfactory results in vaccine treatment for chronic infections of the urinary tract, if stock vaccines are employed. Vaccines were prepared in all cases and used with satisfactory results in the great majority of cases.

In treatment, the author lays great stress upon the beneficial effect of autogenous vaccines and also the use of alkalines in the early acute stage of the infection, and later the use of hexamine compounds, with the production of acid urine.

Experiments have demonstrated that the antiseptic power of hexamine in alkaline or neutral urines is almost nil, and that the antiseptic power rises rapidly as the acidity increases.

The degree of acidity in terms of total solids in the urine is obtained by taking the amount in cubic centimeters of decinormal soda required to neutralize 100 ccm. of urine, and dividing it by the number, beyond a thousand, in the specific gravity of the specimen, and multiplying by twenty. The urine is diluted ten times with distilled water before titration, and phenolphthalein is used as the indicator.

It is important to keep the acidity of the urine high, above four or five, or the hexamine will not act efficiently, a high acidity being of more importance than a large dose of hexamine.

V. D. LESPINASSE.

BLADDER, URETHRA, AND PENIS

Walther, H. W. E.: Calculus Impacted in a Vesical Diverticulum Removed by High Frequency Cauterization. *J. Urol.*, 1918, ii, 325.

The relative infrequency with which cases of calculus impacted within a vesical diverticulum are encountered and the simple means of high frequency cauterization by which such stones can be removed has prompted Walther to report this case.

The patient was a farmer, seventy-nine years of age, who ten years previously had been operated upon for an urethral stricture and an hypertrophy of the prostate, suprapubic prostatectomy and external urethrotomy having been performed at that time. Since then the patient had been in fair health up to a year ago, when he noticed that urinary frequency had developed, both diurnal and nocturnal.

Under local anæsthesia, cystoscopy was performed and upon the right lateral wall of the bladder was seen a small, white mass adherent to the vesical wall and about the size of a pea; by means of an ureteral catheter pushed up against the mass, it was found to be solid. A Bugbee high frequency cautery electrode was then introduced and an Oudin spark current applied to the mass. A diagnosis of calculus was then made. The spark was then applied to the neck of the diverticulum and the electrode tip was deliberately pushed into the

mucosa. Multiple areas were so treated, and by using a wide spark gap, marked penetration was obtained.

Two days later a second cystoscopy with an operating cystoscope was made, and on the right lateral wall where the calculus was first seen, the diverticulum was found in a collapsed state with sloughing edges. On the trigone, a dumb-bell shaped stone was seen lying free in the bladder, which was grasped with a pair of Buerger forceps and easily removed.

In his conclusions, the author states the interesting feature of the case was the curious shape of the calculus and the fact that the greater part of the stone was concealed within the vesical diverticulum.

LOUIS GROSS.

Cathelin, F.: Autoplastic Methods Applicable to the Treatment of Urethral Fistulæ Following War Wounds (Procédés autoplastiques applicables au traitement des fistules de l'urètre, suites de blessures de guerre). *J. d'urol.*, Par., 1918, vii, 267.

Cathelin's report was presented to the third conference of the Directors of the French Urological Centers in October, 1917.

Altogether 94 wounds of the genito-urinary organs have been observed, excluding testicles, 37 being urethral fistulæ. The penile urethra was injured in 18, the scrotal urethra in 5, the perineal urethra in 9, and the deep urethra in 5.

Generally speaking, in about one-third of these patients, the exercise of genital functions is checked.

As regards the route of the projectile, in 35 cases the right thigh was struck; in 34 the left thigh; in 12 both thighs. The anterior face was wounded in 23 cases; the posterior face in 20, and the interior face in 20. Almost every wound of the external genito-urinary region is accompanied by a concomitant injury of the thigh or of the pelvis.

Cathelin gives elaborate details of the treatment of fistulæ, and of the autoplastic reconstructive methods employed. There are quite a series of operative details which it is necessary to know in order that one may obtain success in a minimum of time.

The treatment of urethral fistulæ is by the method of cutaneous inversion (penile or scrotal skin), with bipolar section. This is ideal for traumatic fistulæ of the urethral canal; it can be applied in cases where there is a real loss of substance of the urethral wall; moreover, the method is applicable to all kinds of canalicular surgery. The operation is almost always successful and there is practically no stricture. The author considers this method one of the great progresses of the war.

He gives details of the treatment of complicated fistulæ, including those with complete section of the glans penis, of which type he shows two cases. He points out that autoplastic penile and urethral surgery is a delicate, patient, and lengthy procedure; long intervals must elapse between the successive operations. The final results are most gratifying, since all or almost all cases have recovered with preservation of functions.

The conclusions of the conference after Cathelin's report and a discussion upon it were to the effect that there was no single method of treating urethral fistulæ. If the method of cutaneous inversion gave good results, especially in small fistulæ, the different redoubling methods and autoplastic strips or mucous transplantations ought not to be forgotten, especially in cases where there is large destruction of the urethral walls.

In primary operations of urgency in the genito-scrotal region excisions should be as sparing as possible because every particle of skin is of use later in autoplastic operations. W. A. BRENNAN.

Schmidt, L. E.: Operative Treatment of Urethral Fistula. *Surg. Clin. Chicago*, 1918, ii, 811.

The author describes the technique of the inversion method which has given satisfactory results in a series of cases.

It consists of a linear incision extending well on either side of the fistula, with a circular incision around the fistulous opening. Above and below the fistula the inflammatory tissue is thoroughly excised. The fistula proper is thoroughly dissected, but only at one point is all the inflammatory tissue removed up to the urethral mucosa. In this connection the author emphasizes the importance of the point that the dissection must be done with exceptional care at this point so as not to enter the fistulous tract or injure the mucosa. If the dissection is perfect, the invagination is easily carried out, it remains inverted, and the inverted edges remain in contact with each other without pressure or sutures. This gives a contact of raw surfaces depending on the length of the fistulous tract. Two superficial fine catgut sutures hold the point where the inversion has been carried out. After that the fascia as well as the skin is brought together in the ordinary manner with silk or horsehair sutures.

In all instances at the same sitting the author performs an external urethrotomy and inserts a drain as a preliminary step to this operation for urethral fistula. This is done in order to keep the urethra free from urine passing over this area, and also to avoid catheterization in case retention should set in, and also to avoid the irritation of the permanent catheter. At the time of operation, a sound or urethroscope with mandrin is introduced into the urethra so as to permit of more careful dissection. After the inversion and closing of the wound, a wick or iodoform gauze is placed in the urethra beyond the point of operation, so that it will appear at the external urethral orifice through the urethroscopic tube. This wick is allowed to remain in place for forty-eight to seventy-two hours. The perineal drain is removed in six to seven days.

For illustrations of the various steps of the operation the reader is referred to the original article.

THEO. DROZDOWITZ.

Michel, L. L.: Painless Meatotomy. *N. Y. M. J.*, 1918, cviii, 461.

Michel claims that a successful meatotomy is not so much dependent upon the size of the external incision as upon the divulsion of the membranous band or collar back of the fossa navicularis at its junction with the urethra proper.

The operation is performed painlessly in the following manner: The urethra is distended with one-quarter per cent cocaine solution, which is held for three minutes. A cotton applicator is soaked in the cocaine solution and introduced into the urethra for about one inch. A very fine hypodermic needle is then introduced under the integument in the median raphé at the margin of the glans and the frenum, and infiltration with the cocaine solution is made up to the very edge of the meatus. The cotton applicator is removed and the constriction or band is first severed, then the glans is incised through the infiltrated area. Bleeding is controlled by placing a pledget of cotton well oiled with vaseline within the urethra. LOUIS GROSS.

GENITAL ORGANS

Blahd, M. E.: The Surgical Treatment of Gonorrhœal Epididymitis. *J. Urol.*, 1918, ii, 321.

Blahd describes his method of operative procedure and his results in 14 cases, and says that it is difficult to understand the conservatism prevalent in cases as acute as gonorrhœal epididymitis, as it contradicts all modern surgical principles.

He makes an incision about one-half an inch in length through the scrotal wall and tunica vaginalis, immediately over the most swollen area, and permits the serous or purulent exudate to escape. If serous in character, the incision is closed with one silkworm gut suture, one or two strands being left for drainage, which is removed in twenty-four hours. If pus is present, the incision is packed with a small strip of plain gauze and the wound allowed to granulate. Either a local anæsthetic or gas is used.

Immediate relief is obtained, the patient is able to resume his duties in a few days and shortly thereafter to submit to treatment for his urethritis.

In the author's 14 cases, the average stay in the hospital was 2.5 days, and the average number of days before the patient was able to resume his duties was 4.26. LOUIS GROSS.

Millstone, H. J.: Seminal Vesiculography. *Wisconsin M. J.*, 1918, xvii, 146.

The vesicleogram, Millstone claims, gives very detailed information as to the capacity and internal conformation, and also as to the detection of foreign bodies, kinks, and strictures. It also shows obliteration of the ejaculatory ducts, and differentiates between a foreign body in the vesicle, ureteral stone, and calcified iliac lymph-glands.

The author admits the possibility of sterilization, but with precaution as to infection, trauma and hæmorrhage, the danger is nil. He suggests its employment only where there are definite indications.

The patient is given a brisk cathartic the night before and an enema the morning following. The scrotum is surgically prepared, the vas is opened, the needle introduced, and ten per cent collargol, previously warmed, is slowly injected until the patient complains of colic-like pains in the base of the bladder. The rectum and bladder are both inflated with air and by applying pressure over the suprapubic region by an ordinary abdominal binder, the picture will stand out clearly. LOUIS GROSS.

Merritt, E. P.: Some Aspects of Prostatic Surgery, with Special Reference to Methods of Popular Choice; Pre- and Postoperative Treatment. *J. So. Car. M. Ass.*, 1918, xiv, 224.

The literature on surgery of the prostate, the mortality tables from different sources, and the different methods are reviewed.

Martin gives a very interesting description of 110 patients operated upon, 55 perineally and 55 suprapubicly, with the end-results; and after careful consideration of each he is in great favor of the suprapubic route, as the complications from the perineal were much greater and there are more avenues for postoperative complications.

It is interesting to note the primary mortality, as given by Simons: (1) by the suprapubic method, Walker in 112 cases, 5 per cent; Freyer in 1,000 cases, 5.5 per cent, first 100 cases 10 per cent, last 100 cases 3 per cent; (2) by the perineal method, Young in 450 cases, 3.7 per cent; Watson, 6.2 per cent; Proust, 5.8 per cent; Leguen in 1,026 collected cases, 8.0 per cent; Judd, 5.3 per cent.

The author, after personal operative experience and careful analysis of the subject, believes that the two-stage operation is advisable in the majority of cases on account of end-results and the good condition of patients while convalescing.

The pre-operative treatment should consist of estimating the kidney functionating power through intravenous injection of indigocarmine or phenolphtalein, increasing the urea and other solids of the urine. This is accomplished by proper diet, water in quantities, rest, stimulation of the secretory glands, especially the bowels, and alkaline medication.

The first stage of the operation comes under this head also. It consists of a simple suprapubic cystotomy allowed to remain open, causing free drainage, relieving back pressure on the kidneys, and clearing up distressing bladder symptoms. In the opinion of the author an autogenous vaccination is accomplished by the gradual absorption of bladder contents into the raw surfaces of the wound. The time usually taken between the two operations in a majority of cases is ten to fifteen days.

The important postoperative conditions are uræmia, heart conditions, hæmorrhage, shock, etc. Uræmia can be avoided by small doses of calomel along with diuretin and plenty of water.

Packing, coagulin and horse serum have stopped some severe hæmorrhages.

For shock, glucose enemas to be retained with sodium bicarbonate, Fisher's solution, soda intravenously, stimulants, strychnine, brandy, etc., are used. THEO. DROZDOWITZ.

Luys, G.: Tunneling of the Prostate in the Treatment of Hypertrophied Prostate (Le forage de la prostate dans le traitement de l'hypertrophie de la prostate). *Paris chirurg.*, 1918, x, 5.

Luys has already demonstrated that it was possible to treat urinary retention of prostatic origin by the endo-urethral route. The method by which this is accomplished is called tunneling the prostate. It has a double purpose: (1) destruction of the prostatic bar between the bladder neck and the posterior urethra; (2) the circular tunneling of the prostatic lobes which have become approximated in their whole extent.

The operative technique of cutting a trench through the prostatic bar and boring through the hypertrophied prostatic lobes through the urethra was described by Luys in his former articles. When both have been accomplished, urination is easy and the bladder is completely emptied.

The method finds its indications in the considerable number of cases in which the prostate is not very large. In such cases, where the retention is minimum, prostatectomy is out of proportion to the symptoms, in addition to the fact that its end-results are not always quite satisfactory, even in the hands of the best operators.

Tunneling is not dangerous. It requires neither general anæsthesia nor hospitalization and may even be carried out in patients with renal deficiency who cannot undergo a major surgical operation. Its results are not only immediate but lasting. One of the author's patients operated upon more than four years ago continues to be well and there has never been any recurrence of retention.

Up to the present the author has done 31 of these tunneling operations; in 28 of these the results are quite satisfactory and lasting. The author is, therefore, of the opinion that this method of treatment offers a new route which will be quite acceptable to patients, because it does not necessitate confinement during at least six weeks in a hospital, and it removes the risk of a severe surgical operation.

W. A. BRENNAN.

Briggs, W. T.: Prostatism. *Kentucky M. J.*, 1918, xvi, 334.

The author has chosen the term prostatism rather than the commoner one of prostatic hypertrophy because it is comprehensive. It calls to mind a rather characteristic group of symptoms and at the same time suggests all the pathological changes prone to occur in the bladder and glands in late middle life and old age; nor does it ignore that peculiar and poorly understood nervous disturbance in the bladder and at the vesical neck which is associated more or less with practically every type of prostatic disease.

The author lays great stress upon using the indwelling catheter in cases of acute prostatic congestion of urine that are desperate, cases too severe even for suprapubic cystotomy. He reports a series of 22 cases. Of these 22 cases, 21 were married, and only one was a negro. Every physician knows that negroes seldom suffer from prostatism, and that the disease is commoner in married than in single men. Both of these facts are opposed to sexual excess as an etiological factor.

The oldest patient was eighty-two, the youngest fifty. Neither of these cases had an operation. The average age was sixty-six years. The average age at which symptoms had commenced was seventy-two. In one case, that of the youngest patient, symptoms had been present for only a few weeks, while in several, frequent urination, especially at night, had been present for at least ten years.

If the symptoms were noticeable at sixty-two, it means that changes had occurred in the prostate and bladder muscles even earlier, for the bladder at first struggles successfully against the obstruction. This is known because cystoscopic examinations for other conditions, when there are absolutely no symptoms referable to the prostate and no urethral strictures, often show enlarged glands and markedly trabeculated bladder.

Ten of the cases never had used alcohol, and only two gave a history of alcoholic excess. Several were steady but moderate drinkers.

Ten gave a history of previous neisserian infection, and statistics of larger groups show about the same percentage. Infection in the prostate may, as some believe, be the cause of pathological changes. It is true microscopic sections show a round cell infiltration such as is seen in chronic infections elsewhere, but in those cases that have never had any previous disease of the urethra or prostate, who have never had instrumentation of any kind, it seems more reasonable to consider the infection an effect rather than a cause of the prostatism.

Polyuria, especially of the nocturnal type, was of course the most common symptom. It was present, unless temporarily masked by an acute retention, in every case except two. In many of the cases it was associated with dysuria, urgency, and even incontinence. A few of the patients had to strain out a few drops of urine every ten or fifteen minutes, while others could rest at times for two or three hours. This frequency of urination often dated from the first complete retention.

Eleven cases had complete retention when first seen, and in the other the residual varied from 2 to 25 ounces. In one case, seven years had passed since the first retention and yet frequency was not marked, nor the general condition bad.

Only four of the cases gave a history of hæmaturia, and in none of the four cancer cases was it a symptom. This is in accord with the statistics of larger groups, which show that hæmaturia is commoner with

simple hypertrophy than with carcinoma of the gland.

Sciatic pain was present in three cases, and in two of the three the condition was malignant. Pain in the kidney region, along the ureters and over the scrotum, perineal and testicular pain were occasional symptoms, and in four cases the systemic symptoms were those of a mild uræmia.

Urinalysis usually gave the following: low specific gravity; the average for the 32 cases was 1,013; albumin one or two plus, reaction acid or neutral, urea 0.5 to 1 per cent, red blood cells negative or one or two plus; pus cells from one to four plus. In a few cases the urine was practically normal except for pus cells which were present in every case except two. In these two cases records of the first urinalysis show pus cells were negative, and yet both of these patients had catheterized themselves without any aseptic precautions from two to six times daily for several weeks.

There were nine cases which had not had an operation. Two cases were refused operation because the condition was diagnosed as carcinoma. Both were advised to take the radium treatment. One refused, and his physician reports that he is now bed-ridden and œdematous below the waist. He keeps a catheter fastened in the bladder continuously. When the author saw him last September he was œdematous only in the left thigh, which was attributed to interference with venous return through the left internal iliac vein. Operation seemed a hopeless undertaking because the gland was so hard and the extension so great.

The other case commenced the radium treatment in October, 1917. He spent several months in Baltimore, where he improved enough to have a perineal operation. He voids naturally now, though he had worn a catheter continuously for nine months previous to the radium treatment. However, he is now rapidly losing all he gained, is suffering much pain, and cannot move his right leg and thigh. In all probability he has a metastasis of the right hip.

In cancer of the prostate, radium probably offers more than surgery, but even radium cannot do much when the carcinomatous process is extensive. When this case was first examined by rectum and cystoscopically, the carcinoma was not extensive but it was so reported five months later.

In using the phthalein test, the output of the first hour should always exceed that of the second hour. This shows a reserve in the kidneys.

Except in malignant cases and certain types of obstruction due to contracture of the vesical neck, prostatism should be relieved by prostatectomy. Formerly the high mortality might have been an excuse for palliative treatment and operations of doubtful efficiency; today, when the mortality is very low, considering the age and the usual condition of these patients, there is no excuse for refusing operation to any patient whom it promises to benefit.

The present low mortality is due somewhat to improved operative technique, but much more to improvement in pre- and postoperative treatment.

The phthalein test is an invaluable aid in determining the length of the pre-operative treatment and the advisability of the one- or two-stage operation.

In cancer of the prostate radium probably offers more than surgery, but just how much it offers no one really knows. If circumstances are such that radium cannot be used, if catheterization is difficult or impossible, then prostatectomy or simple drainage should be performed, with everything in favor of simple drainage.

Finally, the end-results are such that one should hesitate before advising the catheter for a condition that demands the knife. V. D. LESPINASSE.

Sainz de Aja: Section of the Frenum in Circumcision and in Frenulum Brevis (La sección del frenillo en la circuncisión y en el frenulum brevis). *Med. Ibera*, Madrid, 1918, iv, 269.

The author says that the frenum fulfills important functions during coitus by rectifying the shape of the glans and contracting the meatus, thus giving proper direction and impulsive force to the stream of semen so that it may reach its proper destination. For these reasons, when circumcision is done in an individual with a normal frenum, this latter ought to be absolutely respected. When the frenum is abnormal or when its section is necessary, care should be taken in suturing that the proper normal degree of tension is preserved. W. A. BRENNAN.

SURGERY OF THE EYE AND EAR

EYE

Blaskovics, L. von: The Operative Treatment of Traumatic Coloboma of the Lid. *Arch. Ophth.*, 1918, xlvii, 404.

The most frequent war injury to the eyelids is coloboma, reaching the oculist in the cicatricial stage. While these injuries occur in peace times, they are so uncommon that no typical operation has been developed. The principle for the reconstruction of the eyelid has remained unchanged and consists in reproducing that condition which was present directly after the injury and then suturing the wound in such a way that the lid returns as far as possible to its normal position. This cannot always be done, as there are often defects which must be replaced by fresh tissue.

The cases generally follow two varieties.

In the first the eyelid is torn away from the canthus, usually the inner one. A scar runs downward from the angle and the lid is anchored in an ectropionated position. To correct this, the lid is fastened to the canthus in a way which can be described as hanging the lid upon a small flap or spur. The steps of the operation are as follows: (1) The scar is outlined by two incisions joined at their extremities. After thoroughly excising the scar tissue as well as the lateral strands, the lid is free. (2) At the inner margin of the wound a flap is formed with its base at the level of the angle of the lids. (3) At the temporal margin of the wound just below the margin of the lid a straight incision is made into the skin. This small incision gapes in the form of a triangle and serves to receive the little flap which has been described in (2). (4) The wound edges are carefully united, the spur-like flap fitting smoothly in the triangular gaping wound just described, and becoming a part of the skin of the lid.

In the second class the margin of the lid has suffered trauma in its middle part and there is a cicatricial area with ectropion. (1) The first incision is made about one cm. below and parallel with the margin of the lid and throughout the whole length of the lid. (2) The scar is then circumscribed with two incisions which run vertical to the margin of the lid. (3) The scar is thoroughly dissected and its lateral expansions are excised. (4) The margins of the coloboma are then sutured, correcting the ectropion and forming a semilunar raw surface underneath the flaps. (5) To cover this wound surface, another curved incision is made running from the lower margin toward the temple beginning 1½ to 2 cm. to the outer side of the inner canthus with the lower extremity considerably farther out than the outer canthus. (6) After detaching this flap, a 1½ cm. triangular piece of skin and subcutaneous fat, base up, is excised from its lower margin. (7) The columns of this triangle are first united, thereby displacing the flap toward the nose and covering the defect, the flap being then sutured. The steps are shown by five illustrations. S. S. Howe.

Curtin, T. H.: Surgical Treatment of Retinal Detachment. *Am. J. Surg.*, 1918, xxxii, 177.

The author introduces this article with the following statement: "The treatment of retinal detachment is probably the most discouraging of all conditions which the ophthalmologist meets in his practice." Much of this is due to the perfunctory treatment which is given to the majority of these cases.

Credit is given Vail of Cincinnati for a paper in which a report is made in the *Annals of Ophthalmology*, 1913, based upon replies received from 281 oculists, 250 of these having had an experience of twenty years or more and averaging five cases a year or about 25,000 cases in all, with the employment of every known line of treatment, "and not a single case of permanent cure in the lot." However, 31 oculists did secure cures; it is reported that 25 each had a single cure; 4 secured two cures, and 2 four cures, making in all 41 patients reported as having been cured. Two of these had albuminuria of pregnancy as the exciting cause and these, if withdrawn from this number, leave 39 cures. In half of these the cure reported is not convincing from the records submitted, leaving twenty cases, or less than one in every 1,000 cases as a possible cure. From these figures Vail is led to the conclusion that there is no proper treatment for this condition.

Medical treatment involves rest in bed, pilocarpine sweats, subconjunctival injections of citrate of soda, or other drugs, as salines, dionin, mercury, etc. The author advises that a search be made for the causative factor. He believes that aside from general treatment surgery offers the best hope in the line of treatment which should have for its aim the removal of the subretinal fluid and the adhesion of the area of detachment to the choroid.

Reference is made to the previous work of James Ware in 1805 and von Graefe in 1863; to the employment of the galvanocautery in 1882 by de Wecker and Masselon; and to the use of irritant fluids as practiced by Fano and Scholer, the latter using iodine injected into the posterior chamber. In 1895 Deutschmann proposed his bisection operation.

Holth, at the meeting of the Ophthalmological Society in 1913, reported six cases of retinal detachment in which the sclera was trephined without evacuating the subretinal fluid. He reported a temporary favorable effect in all and a permanent effect in four of the cases. Holth gives credit for the

operation to Argyll-Robertson in 1874, but it was done at that time for glaucoma absolutum. Holth used a two and one-half millimeter trephine, raised a flap of conjunctiva and episcleral tissue, after which a scleral button was removed and the flap sutured into place without injuring the choroid.

Parker reported a successful case. He trephined the sclera and incised the choroid and retina. Later he reported eleven cases before the June meeting of the American Medical Association, with three good results. The incision into the choroid and retina is made with a cataract knife, allowing a few drops of vitreous to escape.

The author collaborated with Thomson in a series of cases covering a period of five years. Usual medical treatment was employed, together with a technique practically the same as Holth's, as far as the removal of the scleral button is concerned. No enlargement is made of the scleral opening as Holth considers proper at certain times. This is done to avoid any inflammatory process that might cause a later blocking before the usual time for closure of the wound. Aspiration is done if there is but a small amount of suprachoroidal fluid that escapes. If it is decided to aspirate, this is done by carefully pushing the needle of an aspirating syringe through the choroid and aspirating as much fluid as is possible. If no aspiration is done at the time of the operation, then a period of ten days is allowed to elapse before an aspiration is attempted. This operation can be repeated if necessary, as it is reported that there is no attendant reaction.

It is advised that the trephine opening be made over the site of the detachment and as far back as possible on the globe. Most detachments are found in the lower field. Also it is suggested that the scleral opening be made over the most dependent portion of the detachment on account of gravity. The technique of the operation as done by them is given and it is urged that this procedure be resorted to early in order to be successful, for the reason that the parts have undergone such pathological changes as to render their reattachment impossible. No hope of cure is given in cases of high myopia. The indication for the operation is especially recommended in recent traumatic or spontaneous detachments where the fluid accumulation alone seems to continue the detachment.

A series of 70 patients are reported as having been operated upon by the method reported. Most of them were suffering from a long-standing and nearly complete detachment, and no result was expected. Some gave early promise of cure, only to re-detach later. No eyes had to be enucleated because of the operation. Six patients are regarded as cured, having given evidence of the fulfilment of these three requirements: (1) complete re-attachment; (2) restoration of vision and fields; (3) a duration of cure of one year.

The author concludes with the words of Roemer: "The treatment of detachment of the retina is one of the most thankless and unsatisfactory duties we have to perform in ophthalmology." It is his belief that, from the statistics of Vail, the results obtained by this method of scleral trephining with aspiration show an increase in good results over the older methods. It is reported that with good technique there is no danger to the eyeball itself, and in none of the cases was vision lowered; hence the operation is urged upon the profession, especially where one has small or moderate detachments that are found early and when all the subretinal fluid can be removed. It is also urged that a greater study be made of the etiology and the proper medical treatment that should be instituted in conjunction with the operation. J. S. CLARK.

Gifford, H.: The Treatment of Blood Cysts of the Orbit. *Am. J. Ophth.*, 1918, i, 625.

The author reports three cases of this condition and states that in every case of deep-seated orbital tumor of uncertain nature, the possibility of its being a blood cyst or some other benign cyst should be considered., If operation is done, the tumor on being exposed should be secured by passing a thread through it; and its nature should be tested by a puncture. If it proves to be a cyst, thorough cauterization with phenol or something similar in effect should be tried before an attempt is made to extirpate it. OTTO M. ROTT.

Uhlenhuth, E.: The Influence of Function upon the Structure of the Eye. *Arch. Ophth.*, 1918, xlvii, 401.

If an eye of a larva of the European fire salamander is severed from the optic center and is grafted with a flap of surrounding skin to another larva of the same species, the retina of the grafted eye first undergoes a more or less severe degeneration but after a short time begins to regenerate and the normal condition of the retina may be re-established completely.

However completely the structures of the grafted eye may be restored, these eyes are unfit to function since no stimuli can be transmitted to the brain, and it is clear that the opinion of many anatomists and surgeons, i.e., that the structures of an organ cannot regenerate without the organ being in active function, is erroneous. Eyes preserved three and a half years after being grafted show all the functional elements of the retina present.

Further, this regeneration occurs if the functional stimulus, i.e., any trace of light, is prevented from reaching the grafted eyes.

Since the grafted eyes are severed from the nerve centers, the experiments also prove that a trophic stimulus, exerted by the nerve centers upon the tissues, is not an essential factor in the regeneration and maintenance of the functional structures of the eye.

Degeneration and regeneration are matters of nutrition and are dependent on the re-establishment of circulation.

The phenomena exhibited by the cells of the

pigment epithelium are such as are known to occur in retinitis pigmentosa, and the conclusion drawn from the facts presented are that retinitis pigmentosa follows degeneration of the retina and that it is a defensive mechanism against the disturbance, the migrating pigment epithelial cells tending to remove the products of degeneration by their phagocytic action. In no case was there ever observed a migration of the pigment epithelial cells except when freed from the adjoining layer of the retina either by degeneration or detachment of the retina. S. S. Howe.

Viner, G.: A Case of Hyaline Bodies on the Optic Disk. *Brit. J. Ophth.*, 1918, ii, 426.

The description given is that of a lobulated mass, irregular in outline, semi-translucent and gelatinous in appearance, bluish-white in color. This mass, hiding the optic disk, consists of innumerable but discrete round hyaline bodies lying in front of the disk and retinal vessels. The latter are for the main part buried in the mass, emerging near its edge, and are, with two exceptions, healthy in appearance. Near the upper edge there are two small and very tortuous dilated veins coursing over the upper quarter of its surface. Two small arterial branches running from beneath the mass toward the macula present the signs of perivasculitis. There are no newly formed vessels present, and no other signs of any previous inflammatory changes in the eye. The highest plus lens which focuses the surface of the mass is 3 D.

Otto M. Rott.

EAR

Hastings, H.: Reactions of the Normal Labyrinth; Recent Experience in the United States Aviation Examinations. *Ann. Otol., Rhinol. & Laryngol.*, 1918, xxvii, 481.

The author has made the following observations in testing over 800 applicants:

1. Spontaneous nystagmus was not once found.

2. The average duration of after-nystagmus from turning in 282 applicants was 23.49 seconds after right rotation, and 24.17 seconds after left rotation, 15 to 35 being the extremes in about 99 per cent of the applicants examined.

The average difference in seconds in after-nystagmus from right rotation and left rotation was 2⅛ seconds in 200 cases studied. In only 2 of the 200 cases was there a difference of 10 seconds, and in no case more than 10 seconds between the right and left rotation after-nystagmus.

3. Spontaneous past-pointing was not ound.

4. The past-pointing reaction after turning was elicited according to rule in about 90 per cent of those examined. The average number of times of past-pointing in 283 cases was as follows: right arm, 2.22; left arm, 1.91 (after right turning). Right arm, 2.18; left arm, 1.96 (after left turning).

Of 700 applicants, 47 cross-pointed with one or both arms on turning for past-pointing, as follows: on right turning, 5 crossed with the right arm, 26 with the left arm; on left turning, 18 crossed with the right arm, 21 with the left arm. The right arm crossed 23 times, as compared to 47 with the left arm. This fact the author explains by stating that there is in right-handed men a better control over the right arm than the left arm, and during the loss of equilibrium that is extreme in a certain proportion of those turned, there was a greater loss of control over the left than the right arm. The fact that only 5 of the 47 cross-pointed with the right arm on right turning is explained in that for the right arm to cross-point on right turning, there is interference because of the large muscular development of the chest in right-handed men.

The following conclusions are offered: (a) In turning for past-pointing, allowance must be made in some individuals for the extreme loss of equilibrium that results, in which case the cross-pointing is not an evidence of disease but possibly a hypersensitive condition of the end-organ in the labyrinth; (b) in all cross-pointing, the left arm is more likely to cross-point than the right.

5. The falling reaction was found to be abnormal only 11 times in 257 times on right turning, and 10 times in 259 times on left turning.

In conclusion the author reports a few cases where abnormal reactions occurred in men apparently normal in every respect. The author does not attempt to explain them. Otto M. Rott.

Howley, B. M.: Facial Paralysis in Ear Disease. *J. M. Soc. N. J.*, 1918, xv, 270.

Three cases of facial paralysis in acute ear disease are reported. The diagnosis in the first case was acute otitis media with Bell's paralysis. In the second case, a facial paralysis occurred the day after a simple mastoidectomy for acute mastoiditis, and the diagnosis was a facial paralysis from pressure due to postoperative hæmorrhage. The third case was one of facial paralysis due to pressure of the exudate from acute otitis media and mastoiditis before operation. Otto M. Rott.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Hollis, W. A.: Epidemic Streptococcus Infection of the Nose and Throat Clinically Considered. *J. Indiana St. M. Ass.*, 1918, xi, 327.

The author draws attention to the various clinical manifestations of a streptococcus infection of the nose and throat.

In the case of sore throat due to this organism there may be red patches, with or without exudate, the tonsils may or may not be involved; in fact, some of the worst cases have occurred in patients whose tonsils had been previously removed. The exudate may resemble that found in diphtheria, and then only a bacteriological examination will reveal the true nature; but in such cases antitoxin should be administered as a precaution while awaiting the bacteriological report. In streptococcic infections, the systemic manifestations are usually out of all proportion to the local.

The author draws attention also to the sudden onset and termination of this infection, excluding of course the complications, but there also is no infection more insidious and none that can undermine the system so thoroughly.

As compared with staphylococcus infections, the suppurations due to streptococci are much more destructive and more rapidly spreading. There is more local destruction and more liability toward generalized infection and septicæmia in this type of infection.

Concerning the clinical manifestations in the mastoid, the author quotes Andrews' description of three of the principal infections: (1) when the mastoid is full of granulations,—pneumococci; (2) when the mastoid is full of pus and there is a sharp outline between diseased and healthy tissue, and cells are destroyed,—staphylococci; (3) when there is marked destruction of tissue and the constitutional symptoms are out of all proportion to the mastoid symptoms,—streptococci.

Diseases and conditions which will produce and predispose to sinus complications are diphtheria, erysipelas, influenza, scarlet fever, measles, smallpox, tuberculosis, typhoid fever, syphilis, hypertrophies and hyperplasias of the nasal mucosa; close approximation of the middle turbinate to the lateral wall, and septal deformities.

For dyspnœa due to swelling of tonsillar, peritonsillar, and glandular tissue, the author advises dissection of the anterior pillar free from the tonsillar capsule. This condition is to be differentiated from quinsy by the fact that in quinsy the mouth cannot be opened with ease, while in this condition of dyspnœa due to swelling, the mouth can be easily opened. OTTO M. ROTT.

THROAT

Theisen, C. F.: Further Observations on the Radical Treatment of Peritonsillar Abscess. *Ann. Otol., Rhinol. & Laryngol.*, 1918, xxvii, 600.

The author states:

1. The radical method of treatment for the quick relief of distressing symptoms was used in 36 selected cases, in 20 of which the part of the tonsil that had been loosened by the dissection in reaching the pus was removed at the time. In 16 cases a complete tonsillectomy was immediately performed after the pus was evacuated.

2. The operation is performed as early as possible, usually within two or three days after the onset of the attack, and in selected cases. In cases in which there is so much œdema of the parts that the anatomic landmarks cannot be easily determined, the radical method was not attempted.

3. In this type of case the inability to separate the teeth is usually so great that the radical operation would be very difficult. Local anæsthesia, because of the possibility of the aspiration of pus under general anæsthesia, is always used except in young children.

4. The risk of a spread of the infection is slight and has never been experienced by the author. There is no reason why a complete tonsillectomy should not be performed in every suitable case at the time the abscess cavity is opened.

5. No unfavorable symptoms occurred when both tonsils were operated upon. As a matter of fact, the pain in swallowing after the operation does not last much longer, and the case runs about the same postoperative course as when the tonsils are removed under normal conditions. OTTO M. ROTT.

McCoy, J.: Surgical Treatment of Cancer of the Larynx, with Report of a Case. *N. Y. St. J. Med.*, 1918, xviii, 363.

The author prefaces his article with the following statements:

1. Laryngectomy can be accomplished with as little reaction as the removal of a tumor from the arm or leg.

2. This is accomplished by insisting upon: (a) thorough sterilization of the mouth and nasal cavities, along with other sterilization and preparation; and (b) anæsthesia directed away from the lung; that is, local or colonic ether anæsthesia; the author prefers the latter.

After describing the lymphatics of the larynx and the various locations of cancerous growths, the author mentions the surgical procedures adopted for removing them, together with a description of his surgical technique, ending with a report of six

cases: one hemilaryngectomy; two total laryngectomies with partial resection of the œsophagus; and three total laryngectomies. OTTO M. ROTT.

MOUTH

Kazanjian, V. H., and Burrows, H.: Treatment of Gunshot Wounds of the Face Accompanied by Extensive Destruction of the Lower Lip and Mandible. *Brit. J. Surg.*, 1918, vi, 74.

Kazanjian and Burrows describe the treatment of gunshot wounds of the face accompanied by extensive destruction of the lower lip and mandible under three headings: (1) early treatment; (2) re-establishment of mandibular function; (3) restoration of the lower lip and chin.

In the early treatment of these cases the first concern is preserving the patient's life. Certain special dangers are met with in these cases, which require attention. The first is respiratory obstruction; the second and principle one is the absence of the body of the mandible, for this entails the loss both of the anterior attachments of the tongue and of the elevators of the larynx, with a result that when the patient is in a supine position the glottis becomes obstructed. The immediate treatment is to raise the patient into a sitting posture with the head well forward. If this fails to bring relief, a tracheotomy must be done. Another peril to a patient with an infected wound of the mouth is the inhalation of septic material into the air-passages with consequent bronchopneumonia.

Aside from the urgent complications, the amount of surgical interference required in the early stages will be small, and will be limited to the removal of dirt, loose fragments of bone, teeth, and roots. A little later, when the wound begins to show healthy granulations, a little secondary suturing may be necessary.

The wound is left widely open. The dressings are frequently changed and each time the mouth is syringed out with antiseptic solution. Food is administered through a nasal tube. When this is impossible, a small caliber soft œsophageal tube is used.

In order to restore to the patient some power of mastication two distinct procedures are required. In the first place, it must be insured at an early stage that the portions of the lower jaw which have survived shall remain in a position which will enable them to perform useful work. The second process is the provision of an artificial substitute for the missing portion of the jaw.

In the first place, temporary splints are adjusted as soon as local conditions are sufficiently favorable. Two types of temporary splints are made: (1) If there are teeth existing on both sides of the jaw, metal bands are fastened to them and these bands are connected by a heavy arch which carries a T-piece in the middle; this arch holds the two parts of the jaw in proper position. A removable vulcanite splint is made to fit over the arch. (2) If no teeth are available for giving attachment to these splints, a metal plate of suitable size is bent into shape. To the ends of the plate moulding composition is added, and the impression of the alveolar ridges is taken with properly occluded surfaces. The plate is removed from the mouth, and after trimming off the surplus composition, the model is reproduced in vulcanite rubber.

During this stage it is important to insure that a buccal furrow remains between the cheek and the remaining portions of the alveolus of the lower jaw.

Before proceeding to close the wound, an artificial jaw is made of vulcanite, and the patient wears this for a while in order to get accustomed to it before the plastic operation is done on the soft parts. This appliance is held in place by the remaining teeth, if any are available, or in the absence of teeth, by the alveolar ridges of the lower jaw and by the occlusion of the upper teeth. It has sufficient bulk to replace the missing bony tissue and is made in three sections to facilitate removal, cleaning, and readjustment in the mouth. After the plastic operations have been completed and the soft tissues have assumed their final form, a new appliance is made as a permanent denture.

In the plastic operation, the flaps are taken from the cheeks and the sides of the neck. To provide a lining for the deep pouch in which the artificial chin has to lie, a flap of skin is turned up from the front of the neck. To restore the pink margin to the lip is not so difficult as might be supposed. Usually some portion of the lower lip has survived, and this can often be used; for the lips can be stretched to a remarkable extent, and half a lip, detached except at one end, can be available for the whole width of the mouth.

The authors report four cases, in all of which they secured excellent results. The principal points to be observed in the treatment are:

1. The preservation of the surviving portions of the mandible in the desired position.

2. The substitution of lost bony tissue by vulcanite appliances before the performance of plastic operations on the soft parts.

3. Postponement of the main plastic operation until suppuration has ceased and the patient is in good physical condition.

4. Use of a similar scheme of flaps in all cases.

As to the efficiency of the jaw to masticate food, a good part of this function was restored in the cases reported. A simple plan may be used to enable the patient to chew with greater force and satisfaction by teaching him to press up the chin with the left thumb during each act of mastication. With practice and perseverence the habit becomes acquired, and while being helpful, it is not unsightly.

G. W. HOCHREIN.

BIBLIOGRAPHY *of* CURRENT LITERATURE

GENERAL SURGERY — SURGICAL TECHNIQUE

NOTE.— The bold face figures in brackets at the right of a reference indicate the page of this issue on which an abstract of the article referred to may be found.

Aseptic and Antiseptic Surgery

The problem of healing; science the key. C. H. BROWNING. Med. Press, 1918, cvi, 269.

Sepsis and antiseptics. G. P. MYERS. Grace Hosp. Bull., 1918, iii, 7.

Preliminary report of a method for estimating in vivo the germicidal activity of antiseptics. J. A. PERKINS. Ann. Surg., Phila., 1918, lxviii, 241.

Bacteriological examination of war wounds. MOTCKI. Sei-i-Kwai, Tokyo, 1918, xxxvii, No. 8.

Study of streptococcal wounds. PLISSON, L. RAMOND, and J. PERNET. Presse méd., Par., 1918, xxvi, 393. **[113]**

The protection of wound surfaces. SCHAEDEL. Deutsche med. Wchnschr., 1918, xliv, 1054.

The cure of war wounds. G. LOUVARD. Presse méd., Par., 1918, xxvi, Supp., 657.

War wounds in their first period of evolution. G. LEO. Paris chirurg., 1918, x, 29.

Combined inquiry into the presence of diphtheria and diphtheroid bacilli in open wounds. J. G. ADAMI, F. B. BOWMAN, F. ADAMS, and others. Canad. M. Ass. J., 1918, viii, 769. **[113]**

Hot air as an aid to surgery. H. ISELIN. Cor.-Bl. f. schweiz. Aerzte, 1918, xlviii, 1297.

Treatment of war wounds by warm air under pressure. BELOT AND DECHAMBRE. Presse méd., Par., 1918, xxvi, 473.

The use of formaldehyde and glycerine in the treatment of wounds. A. S. KITCHEN. J. Mich. St. M. Soc., 1918, xvii, 404.

Dakin's solution and Dakin's oil in the normal peritoneal cavity of the dog. E. G. GREY. Bull. Johns Hopkins Hosp., 1918, xxix, 221.

Notes on Dakin's solution. K. P. A. TAYLOR. Therap. Gaz., 1918, xlii, 687.

The Carrel method in the treatment of fistulous wounds. VERDELET. Gaz. hebd. d. sc. méd., Bordeaux, 1918, xxxix, 149.

The Carrel treatment of war wounds in 1918. G. W. HAWLEY. Am. J. Orthop. Surg., 1918, xvi, 354. **[114]**

The action of chlorine on suture material. G. L. SERVOSS. Med. Rec., 1918, xciv, 634.

The Dakin chlorine-carrying antiseptics. A. S. BURDICK. Am. J. Clin. Med., 1918, xxvi, 749.

Therapeutic value of tar oil dressings in repair of wounds. COLIN. Bull. gén. de therap., Par., 1918, clxx, 145.

Ether dressings. DESCOMPS and RICHARD. Paris méd., 1918, viii, 229.

Primary suture. EHRENPREIS. Presse méd., Par., 1918, xxvi, 395. **[114]**

Early secondary sutures. G. LEO. Paris chirurg., 1918, x, 42.

Early suture in provoked abscesses. S. MENGHETTI and G. AQUILANTI. Policlin., Roma, 1918, xxv, sez. prat., 632.

Urinary antisepsis; the antiseptic properties of normal dog urine. E. G. DAVIS and R. F. HAIN. J. Urol., 1918, ii, 309.

Surgical treatment of war wounds. C. L. GIBSON. N. Y. St. J. Med., 1918, xviii, 345. **[115]**

The occurrence and significance of bacillus welchii in certain wounds. J. L. STODDARD. J. Am. M. Ass., 1918, lxxi, 1400.

Anæsthetics

Spinal anæsthesia with novocaine and with stovaine. H. P. ACHARD. Progrès méd., Par., 1918, p. 299.

A new apparatus for general anæsthesia with ethyl chloride. M. BUREAU. Presse méd., Par., 1918, xxvi, 497.

Respiratory mask for suppression of bronchopulmonary etherization complications. A. MOTLET. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 664.

Some considerations on the physiology of anæsthesia by chloroform. G. A. BUCKMASTER. Proc. Roy. Soc. Med., 1918, xi, Sect. Anæsth., 15.

Nitrous oxide-oxygen-ether outfit. H. E. G. BOYLE. Proc. Roy. Soc. Med., 1918, xi, Sect. Anæsth., 30.

Combined gas, oxygen, ether and warmed ether apparatus. C. T. W. HIRSCH. Proc. Roy. Soc. Med., 1918, xi, Sect. Anæsth., 29.

The administration of anæsthetics to soldiers. A. MILLS. Brit. M. J., 1918, ii, 343. **[116]**

A case of arterial anæsthesia. B. CALCAGNO. Semana méd., Buenos Aires, 1918, xxv, 162.

Cross section anæsthesia. K. EICHLAM. Deutsche med. Wchnschr., 1918, xliv, 1047.

Novocaine spinal anæsthesia. G. PALACIOS. Semana méd., Buenos Aires, 1918, xxv, 377.

Heart lesions in anæsthesia. F. L. RICHARDSON. Boston M. & S. J., 1918, clxxix, 470.

Surgical Instruments and Apparatus

New foot-key for gas cylinders. O. MILLAURO. Proc. Roy. Soc. Med., 1918, xi, Sect. Anæsth., 28.

Celluloid solution for traction. W. F. CUNNINGHAM. Brit. M. J., 1918, ii, 376.

A simple grip for adjusting suspension cords. H. E. DURHAM. Brit. M. J., 1918, ii, 377.

Tonsil artery forceps. D. MCKENZIE. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 137.

An aspirator for paracentesis. H. C. STEVENS. J. Am. M. Ass., 1918, lxxi, 1381.

A rapid method for making plaster casts for the lower limb. ROEDERER. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 647.

An extension splint. BOECKER. Deutsche med. Wchnschr., 1918, xliv, 1037.

A splint for fractured shaft of the femur. H. E. GRIFFITHS. Brit. M. J., 1918, ii, 374.

Sahli's volume sphygmobolometer; an improvement over the older pressure sphygmobolometer. N. B. POTTER. Am. J. M. Sc., 1918, clvi, 490.

A convenient method for filing surgical sections. W. L. ROBINSON. J. Am. M. Ass., 1918, lxxi, 1379.

SURGERY OF THE HEAD AND NECK

Head

Clinical significance of headache, vertigo, and nausea. E. J. BERNSTEIN. Med. Rev. Revs., 1918, xxiv, 592.

Extensive scalp burn. I. DOCHE. J. de méd., Bordeaux, 1918, lxxxix, 262.

Hæmangioma of the scalp. A. D. BEVAN. Surg. Clin. Chicago, 1918, ii, 713. [116]

Reconstruction of the eybrow. H. MORESTIN. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1452. [117]

The operative treatment of trifacial neuralgia. W. SHARPE. Ann. Surg., Phila., 1918, lxviii, 371.

Exercises for the development of the muscles of the face, with a view to increasing their functional activity. A. P. ROGERS. Dental Cosmos, 1918, lx, 857.

Phenomena of irritation of the visual centers following a perforating wound of the right occipital region. CHATELIN and PATRIKIOS. Survey Head Surg., 1918, i, 112.

The superior longitudinal sinus in infants; its value in transfusion and for rapid medication; its adaptability in procuring blood for diagnosis. L. FISCHER. Med. Rec., 1918, xciv, 399. [117]

Two cases of sinus thrombosis which presented unusual difficulties in diagnosis. E. R. FAULKNER. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 970.

Prevention of mastoid abscess by myringotomy; asepsis in nose and throat operations; focal infection from sinus disease. Survey Head Surg., 1918, i, 93.

A large malignant growth removed from the right antrum. H. TILLEY. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 136.

Some observations on the diseased conditions of the salivary glands and their ducts. D. ROY. Med. Times, 1918, xlvi, 225. [117]

Treatment of gunshot fractures of the mandible. J. B. ROBERTS. Ann. Surg., Phila., 1918, lxviii, 245.

Some aspects of maxillary antrum disease. W. B. BROWNLIE. Brit. M. J., 1918, ii, 403.

Recurrent dislocation of the lower jaw. J. B. BLAKE. Ann. Surg., Phila., 1918, lxviii, 141. [118]

Report upon cranial losses of substance. T. TUFFIER, J. L. FAURE, and H. MORESTIN. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1346. [119]

A huge hæmangioma of the liver associated with hæmangiomata of the skull and bilateral cystic adrenals. R. H. MAJOR and D. R. BLACK. Am. J. M. Sc., 1918, clvi, 469.

The subjective sequelæ of craniocerebral traumatisms. A. MAIRET and H. PIÉRON. Presse méd., Par., 1918, xxvi, 501.

Intracranial pressure. W. F. HAMILTON. Canad. M. Ass. J., 1918, viii, 873.

Treatment of penetrating cranial wounds. GUÉNARD. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 628.

An operable tumor involving the gasserian ganglion. C. H. FRAZIER. Am. J. M. Sc., 1918, clvi, 483.

Cranioplasty by osteoperiostic transplant. BEGOUIN. Gaz. hebd. d. sc. méd. Bordeaux, 1918, xxxix, 150.

Epidemic encephalitis. A. J. HALL. Brit. M. J., 1918, ii, 461.

Middle meningeal injury and extradural hæmatoma. PRANDO. Semana méd., Buenos Aires, 1918, xxv, 407.

Syphilitic meningitis in infants and young children, with report of a case. P. A. BLY. Am. J. Syph , 1918, ii, 712.

Wilson's disease; progressive lenticular degeneration. F. TILNEY. Med. Clin. N. Am., 1918, ii, 45.

Sarcoma of the brain. H. M. FISHER and A. G. ELLIS. N. Y. M. J., 1918, cviii, 590.

The results of severe head and brain wounds. WEINERT. Deutsche med. Wchnschr., 1918, xliv, 1064.

Cerebellar tumor. J. M. OBARRIO and R. FUMASOLI. Semana méd., Buenos Aires, 1918, xxv, 435.

The surgical importance of the cerebellar amygdalæ. W. J. MOORE. Glasgow M. J., 1918, viii, 216.

Aneurism and rupture of the left posterior cerebral artery. J. J. A. MCMULLIN. U. S. Nav. M. Bull., 1918, xii, 702.

Cerebral œdema from pressure. W. A. JONES. J. Am. M. Ass., 1918, lxxi, 1265.

Histogenesis and pathology of subdural hæmorrhages. G. B. HASSIN. Med. Rec., 1918, xciv, 669.

Hypertension of cerebrospinal fluid with papillary stasis following ligature of the internal jugular. G. GUILLAIN. Bull. et mém. Soc. méd. d. hôp. de Par., 1918, xlii, 757.

Histogenesis of cerebral hypertrophic pachymeningitis and its relation to syphilis. G. B. HASSIN. Am. J. Syph., 1918, ii, 715.

Hypophyseal syndrome of infundibular origin. O. M. GONZALES. Anal. de Fac. de méd., Lima, 1918, i, 103.

Tumor of the pituitary gland; technique of operative approach. L. L. MCARTHUR. Surg. Clin. Chicago, 1918, ii, 691. [119]

Neck

Chronic torticollis and its operative treatment, with report of three cases. A. H. NOEHREN. Interst. M. J., 1918, xxv, 698.

Congenital wry-neck. A. D. BEVAN. Surg. Clin. Chicago, 1918, ii, 895.

Surgical considerations on cervical rib. I. SCALONE. Chir. d. organ. d. mov., Bologna, 1918, ii, 275. [119]

A case of congenital cystohygroma. A. PERERA. Prog. de los clin., Madrid, 1918, vi, 146.

Persistence of the thyroglossal duct. B. D. PARISH. U. S. Nav. M. Bull., 1918, xii, 713.

The liberation of the internal secretion of the thyroid gland into the blood. J. M. ROGOFF. J. Pharmacol. & Exp. Therap., 1918, xii, 193.

Note on the preparation of a soluble concentrated product of the thyroid gland. J. M. ROGOFF. J. Pharmacol. & Exp. Therap., 1918, xii, 207.

Multiple transplantations of the thyroid and the lymphocytic reaction. L. LOEB. J. Med. Research, 1918, xxxix, No. 1. [120]

Syngenesioplastic transplantation of the thyroid in the guinea-pig. L. LOEB. J. Med. Research, 1918, xxxix, No. 1.

A clinical study of 55 cases of hypothyroidism in children. M. B. GORDON. Arch. Pediat., 1918, xxxv, 577.

Radium therapy in hyperthyroidism. W. H. B. AIKINS. Boston M. & S. J., 1918, clxxix, 558.

Further observations on the thyroid gland. W. EDMUNDS. J. Pathol. & Bacteriol., 1918, xxi, 23.

Shrinkage of enlarged thyroid after pelvic operations. G. E. SHOEMAKER. Am. J. Obst., N. Y., 1918, lxxviii, 617.

Toxic non-exophthalmic goiter. E. H. REEDE. N. Y. M. J., 1918, cviii, 452. [121]

Experimental lesions in the cervical sympathetic ganglia in relation to exophthalmic goiter. L. B. WILSON. Am. J. M. Sc., 1918, clvi, 553.

Report of an interesting case of exophthalmic goiter. F. ROBERSON. Charlotte M. J., 1918, lxxviii, 157.

Exophthalmic goiter in a girl. C. W. GITTENS. Brit. M. J., 1918, ii, 465.

Treatment of exophthalmic goiter by injections of hot water. P. M. BARLARA and E. N. OLIVIERI. Semana méd., Buenos Aires, 1918, xxv, 458.

Death following roentgen treatment of exophthalmic goiter. K. SECHER. Ugesk. f. Læger, Copenhagen, 1918, lxxx, 1613.

Basedow's symptoms following explosion of a shell. MONIER-VINARD. Survey Head Surg., 1918, i, 112.

SURGERY OF THE CHEST

Chest Wall and Breast

Physical examination in diseases of the adult chest. J. S. PRITCHARD. Mississippi Valley M. J., 1918, xxv, 295.

The after-effects of wounds of the chest and their treatment. J. MEAKINS and T. W. WALKER. Canad. M. Ass. J., 1918, viii, 910.

Penetrating wounds of the chest. R. B. BLAIR and G. C. SHATTUCK. J. Roy. Army M. Corps, 1918, xxxi, 177.

Bullet extracted from the sixth rib. PILLET. Paris chirurg., 1918, x, 52.

The value of X-rays in the treatment of malignant disease of the breast. C. SABERTON. Brit. M. J., 1918, ii, 337. **[122]**

The associated study of the clinical and the macroscopic and microscopic appearances of the carcinomatous tumors of the breast. H. C. RUTHERFORD-DARLING. Med. J. Australia, 1918, ii, 240.

Some problems in the treatment of carcinoma of the breast. H. W. HEWITT. Grace Hosp. Bull., 1918, iii, 10.

Surgical treatment of penetrating wounds of the thorax. H. M. W. GRAY. Med. Press, 1918, cvi, 283, 303.

Congenital defect of the thorax, with Sprengel's deformity. H. BURROWS. Brit. J. Surg., 1918, vi, 325.

Spontaneous pneumothorax in pulmonary tuberculosis. M. KAHN. N. Y. M. J., 1918, cviii, 632.

Two cases of artificial pneumothorax. C. G. R. GOODWIN and F. C. COLEY. Brit. M. J., 1918, ii, 405.

The early treatment of septic pleural effusions; complications of penetrating chest wounds. V. COMBIER and J. HERTZ. Lyon chirurg., 1918, xv, 311.

Diagnosis in pleuritis. W. F. AMOS. Med. Sentinel, 1918, xxvi, 483.

Treatment of purulent pleural effusions. T. TUFFIER. Presse méd., Par., 1918, xxvi, 497. **[123]**

Early resection of ribs in the purulent pleurisy of influenza. V. C. LEERSBERG. Nederl. Tijdschr. v. Geneesk., 1918, ii, 864.

Clinical and radioscopic researches on certain late sequelæ of pleuropulmonary war wounds. PÉHU and DAGUET. Lyon chirurg., 1918, xv, 291. **[124]**

Four new cases of total pleurectomy for pleural infection with pachypleuritis. J. L. ROUX-BERGER. Lyon chirurg., 1918, xv, 330.

Treatment of empyema. B. C. WILLIS. U. S. Nav. M. Bull., 1918, xii, 786.

Empyema complicating pneumonia. J. J. TOLAND. U. S. Nav. M. Bull., 1918, xii, 783.

Empyema. E. W. ROCKEY. Mil. Surgeon, 1918, xliii, 384.

An interesting case of infantile empyema. R. M. ORIHUELA. Rev. de med. y cirug., Habana, 1918, xxiii, 499.

A note on empyema; a simple method of pleurotomy. J. MACDONALD. Rev. méd. de Sevilla, 1918, xxxviii, 145.

Surgical sequelæ of the grippe. INIGO. Siglo méd., Madrid, 1918, lxv, 829. **[124]**

Extraction of a posterior mediastinal projectile by the method of Petit de la Villeon. G. RIVIÉRE. Lyon méd., 1918, cxxvii, 413.

Contribution to the study of mediastinal pathology. A. S. QUESADA. Siglo méd., Madrid, 1918, lxv, 630.

Wide and economic route of approach to the cervico-mediastinal space. R. LE FORT. Presse méd., Par., 1918, xxvi, 373. **[124]**

Thymusectomy and its relationship to rickets. J. M. RENTON and M. E. ROBERTSON. J. Pathol. & Bacteriol., 1918, xxi, 1.

Trachea and Lungs

Case of shrapnel wound of the trachea. W. S. SYME. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 177.

A rare foreign body in the trachea. E. SCHLESINGER. Deutsche med. Wchnschr., 1918, xliv, 1055.

Foreign body impacted in the trachea. F. A. ROSE. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 129.

Recurrent teratomatous growth of the trachea. W. FREUDENTHAL. N. Y. M. J., 1918, cviii, 582. **[125]**

A new type of tracheal aspirator. J. A. BERUTI. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 323.

Concomitant bronchoscopy and œsophagoscopy. S. IGLAUER. N. Y. M. J., 1918, cviii, 627.

A foreign body in the bronchus. E. W. GOULD. U. S. Nav. M. Bull., 1918, xii, 721.

Report of a case of a foreign body in the left main bronchus for ten years. T. HUBBARD. J. Am. M. Ass., 1918, lxxi, 1380.

Band of a gold crown in the bronchus; report of a case. C. JACKSON and W. H. SPENCER. Dental Cosmos, 1918, lx, 905.

The endobronchial treatment of bronchiectasis and bronchial abscess. E. MAYER. N. Y. M. J., 1918, cviii, 666.

The bronchial tree. C. JACKSON. Am. J. Roentgenol., 1918, v, 454.

The extraction of intrapulmonary projectiles. G. MARION. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1439. **[125]**

Localization of the lobes of the lungs. C. JACKSON. Am. J. Roentgenol., 1918, v, 456.

Concerning a roentgenological conception of pulmonary tuberculosis. F. S. BISSELL. Am. J. Roentgenol., 1918, v, 468.

Errors in diagnosis of pulmonary tuberculosis. A. TRASOFF. N. Y. M. J., 1918, cviii, 665.

The surgical treatment of pulmonary tuberculosis. I. P. OLMEDO. Med. Ibera, 1918, v, 48.

Induced pneumothorax for lung gangrene. F. TOBISSEN. Ugesk. f. Læger, Copenhagen, 1918, lxxx, 1577.

Abscess of the lung; an important sequel to tonsillectomy. A. D. BEVAN. Surg. Clin. Chicago, 1918, ii, 921.

Partial resection of the lung for abscess. R. GRÉGOIRE. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1435.

Pulmonary metastasis. A. W. CRANE. Am. J. Roentgenol., 1918, v, 479.

Heart and Vascular System

Unusual malformations of the heart in a case of congenital heart disease. J. I. ROBERTSON. J. Pathol. & Bacteriol., 1918, xxi, 78.

Asphyxiation; respiration; circulation. P. A. KANE. N. Y. M. J., 1918, cviii, 592.

Pharynx and Œsophagus

Foreign œsophageal body with perforation of a mediastinal artery at its junction with the aortic arch. G. MASSA. Policlin., Roma, 1918, xxv, sez. chir., 305.

Consideration of hysterical spasm of the œsophagus. S. MOURAD. Ugesk. f. Læger, Copenhagen, 1918, lxxx, 1539.

Œsophageal stricture. J. B. WRIGHT. Charlotte M. J., 1918, lxxviii, 160.

SURGERY OF THE ABDOMEN

Abdominal Wall and Peritoneum

Desmoid tumor of the abdominal wall. A. D. BEVAN. Surg. Clin. Chicago, 1918, ii, 901.

Surgical aspects of right subphrenic abscess. J. BURKE. Ann. Surg., Phila., 1918, lxviii, 383. **[126]**

Subphrenic abscess after pseudo-appendicitis. H. LUBBERS. Nederl. Tijdschr. v. Geneesk., 1918, ii, 955.

Some dispositions of the gastrocolic ligament. TRIAS PUJOL. Arch. espan. d. enfer. d. apar. digest., Madrid, 1918, i, 309. **[126]**

Syphilitic peritonitis as a frequent cause of ascites in cirrhosis of the liver. M. LETULLE. Bull. Acad. de méd., Par., 1918, lxxx, 209.

Congenital hernia of the diaphragm. W. A. DOWNES. Surg., Gynec., & Obst., 1918, xxvii, 393. **[127]**

Ventral hernia; a device to strengthen the abdominal wall. H. H. GREENWOOD. Brit. M. J., 1918, ii, 312. **[127]**

Mesenteric disinsertion in strangulated hernia. A. GALLO. Semana méd., Buenos Aires, 1918, xxv, 337.

Simple operation for double inguinal hernia; one incision. D. T. WINTER, JR. J. M. Soc. N. J., 1918, xv, 340.

A case of gunshot injury of Meckel's diverticulum. G. TAYLOR. Brit. J. Surg., 1918, vi, 324.

Gastro-Intestinal Tract

The thread test of gastric functioning. E. C. VAN LEERSUM. Nederl. Tijdschr. v. Geneesk., 1918, ii, 794.

Gastric carcinoma. C. L. MIX. Surg. Clin. Chicago, 1918, ii, 976.

Sarcomatous leiomyoma of the stomach. R. FRITZSCHE. Cor.-Bl. f. schweiz. Aerzte, 1918, xlviii, 1273.

Tumors of the abdomen simulating malignant neoplasms. C. A. CASTANO. Semana méd., Buenos Aires, 1918, xxv, 242.

Gastroduodenal ulcer and chronic appendicitis. DUBARD. Lyon chirurg., 1918, xv, 356. **[127]**

Some principles underlying the surgery of gastric ulcer. G. CRAIG. Med. J. Australia, 1918, ii, 282.

The end-results of gastro-enterostomy in non-complicated stomach ulcer. C. BONORINO UDAONDO. Rev. Asoc. méd. argent., Buenos Aires, 1918, xxix, 5. **[128]**

Ulcer of the stomach on the lesser curvature. A. D. BEVAN. Surg. Clin. Chicago, 1918, ii, 911.

A case of death by hæmatemesis. F. GALLART. Prog. de los clin., Madrid, 1918, Supp., No. 170.

The symptomatology of the disorders of the stomach from the physiological aspect. A. E. MILLS. Med. J. Australia, 1918, ii, 279.

Presence of spirochæte-like bodies in the gastric wall. TERADA, YASAKI, and KAWAAI. Sei-i-Kwai, Tokyo, 1918, xxxvii, No. 8.

A study of the ferment trypsin. Y. MASAI. Sei-i-Kwai, Tokyo, 1918, xxxvii, No. 9.

A new sign for the diagnosis of gastric syphilis. J. GUARDADO. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 342.

Diffuse infiltrative gastritis due to acquired syphilis. R. NOVARAO. Anal. d. Inst. mod. de clin. méd., Buenos Aires, 1918, iii, 132.

A brief review of the roentgenological pathology of the stomach. E. J. LEAVITT. Long Island M. J., 1918, xii, 317. **[128]**

Hair ball removed from the stomach of a girl. S. MONRAD. Ugesk. f. Læger, Copenhagen, 1918, lxxx, 1546.

Utilizing the falciform ligament as an adjunct gastroptotic support. H. CROUSE. Am. J. Surg., 1918, xxxii, 241.

Transient and alimentary glycosuria after gastro-enterostomy for pyloric stricture of ulcerous origin. P. LE NOIR. Bull. et mém. Soc. méd. d. hôp., Par., 1918, xlii, 707. **[129]**

Demonstration of a perfected technique for posterior gastro-enterostomy and for cholecystotomy. E. A. PRINTY. Surg. Clin. Chicago, 1918, ii, 989.

The operative treatment of congenital pyloric stenosis. ELS. Deutsche med. Wchnschr., 1918, xliv, 1063.

Brief report of an infant with congenital stricture of the duodenum; operation; death. H. M. MCCLANAHAN. Arch. Pediat., 1918, xxxv, 533.

The modern treatment of gall-stone disease as affected and controlled by duodenal intubation. J. C. HEMMETER. Med. Rec., 1918, xciv, 575. **[129]**

Intestinal obstruction produced by the evagination of the ileum into the urinary bladder. W. H. BARBER. Ann. Surg., Phila., 1918, lxviii, 429.

Employment of pituitrin in intestinal obstruction. H. ROCHA. Brazil-méd., 1918, xxxii, 251.

Intestinal obstruction. H. A. JOHNSTON. Calif. St. J. Med., 1918, xvi, 464.

Intestinal occlusion by Meckel's diverticulum. P. O. BOLO and A. G. GALLO. Semana méd., Buenos Aires, 1918, xxv, 421.

Intestinal occlusion with unusual anatomical findings. HAEDKE. Deutsche med. Wchnschr., 1918, xliv, 1108.

Intestinal occlusion by invagination; resection of the loop. A. C. MOLINA. Semana méd., Buenos Aires, 1918, xxv, 293.

Adenoma of the small intestine in an infant, with resulting volvulus. J. S. MANSON. Brit. M. J., 1918, ii, 432. **[130]**

Partial or incomplete intussusception as an etiologic factor in untoward postoperative sequelæ following appendectomy. H. A. SHAW. Northwest Med., 1918, xvii, 283.

The surgical treatment of intussusception. W. H. C. ROMANIS. Practitioner, Lond., 1918, ci, 152. **[130]**

Intestinal stasis, ileocæcal valve incompetency, and chronic appendicitis roentgenologically considered. J. S. DIAMOND. N. Y. M. J., 1918, cviii, 672.

Postpartum intestinal invagination. P. O. BOLO. Semana méd., Buenos Aires, 1918, xxv, 407.

Long resections of the small bowel. J. E. CANNADAY. Tr. South. Surg. Ass., St. Augustine, 1917, December. **[130]**

A case of inflammatory tumor of the cæcum. A. CEBALLOS. Semana méd., Buenos Aires, 1918, xxv, 146.

Peritoneal pseudo-tuberculosis of appendicular origin. J. VITRAC. J. de méd., Bordeaux, 1918, p. 224.

A personal case of appendicular calculi revealed by the X-rays. F. BLANCHOD. Rev. méd. de la Suisse Rom., 1918, xxxviii, 599.

Biliary calculus and chronic appendicitis. J. URIBE. Rev. clin. Medellin, 1918, iii, 482.

A case of torsion of the appendix. J. E. PAYNE. Brit. J. Surg., 1918, vi, 327.

Subacute appendicitis with ascarides. F. OSORIO. Rev. clin. Medellin, 1918, iii, 479.

The pathology of worm infection of the vermiform appendix. Y. MATSUOKA. J. Pathol. & Bacteriol., 1918, xxi, 221.

The diagnosis of chronic appendicitis. W. F. CHENEY. Am. J. M. Sc., 1918, clvi, 494.

The diagnosis of appendicitis complicating pregnancy. G. H. BUNCH. J. So. Car. M. Ass., 1918, xiv, 250. [131]

Appendicitis in children. J. O. BOWER. N. Y. M. J., 1918, cviii, 501. [131]

The low lateral incision and a method of nerve block for appendectomy. L. F. WATSON. Ann. Surg., Phila., 1918, lxviii, 397.

Five cases of partial colectomy. L. URRUTIA. Arch. d. enfer. d. apar. digest., Madrid, 1918, i, 451.

Treatment of every-day rectal troubles. E. W. SMITH. N. Eng. M. Gaz., 1918, liii, 452.

Congenital malformations of the rectum and anus. F. PASCHAL. Texas St. J. Med., 1918, xiv, 220.

A case of cancer of the rectal ampulla. N. DE GOUVEA. Brazil-méd., 1918, xxxii, 285.

Local anæsthesia in rectal diseases. W. F. BURROWS and E. C. BURROWS. Internat. J. Surg., 1918, xxxi, 317.

The search for occult blood in the fæces. C. POCHHAMMER. Deutsche med. Wchnschr., 1918, xliv, 998.

Prognostic value of the soluble albumin and of the blood contained in the fæces. M. LABBÉ and G. CANAT. Presse méd., Par., 1918, xxvi, 499.

The diagnostic significance of the examination of fæces. I. R. KUHN. Med. Rev. Revs., 1918, xxiv, 600.

Liver, Pancreas, and Spleen

Hypernephroma of the falciform ligament of the liver. A. H. HARRIGAN. Ann. Surg., Phila., 1918, lxviii, 395.

Danger of exploratory puncture of the liver; case of death from hæmorrhage. O. CLARK. Brazil-méd., 1918, xxxii, 305.

The secretory pressure of the liver, with special reference to the presence or absence of a gall-bladder. F. C. MANN and J. P. FOSTER. Am. J. Physiol., 1918, xlvii, 278. [132]

Studies in cholelithiasis; the immediate effect of the various types of operations upon the cholesterinæmia. A. O. WILENSKY and M. A. ROTHSCHILD. Am. J. M. Sc., 1918, clvi, 564.

Large calculus removed from the common duct. R. G. LE CONTE. U. S. Nav. M. Bull., 1918, xii, 710.

Reconstruction of the common bile-duct. J. S. HORSLEY. J. Am. M. Ass., 1918, lxxi, 1188. [132]

Reconstruction of the choledochus. LeG. GUERRY. J. Am. M. Ass., 1918, lxxi, 1194.

Chronic pancreatitis; cancer of the body of the pancreas. L. ODRIOZOLA. Anal. d. Inst. mod. d. clin. méd., Buenos Aires, 1918, iii, 184.

Acute pancreatitis. J. B. DEAVER. Ann. Surg., Phila., 1918, lxviii, 281. [133]

Traumatism a factor in the etiology of pancreatic cysts. R. W. JONES. Wisconsin M. J., 1918, xvii, 183.

Transplantation of bone-marrow into the spleen; experimental observations on myeloid metaplasia. Y. MATSUOKA. J. Pathol. & Bacteriol., 1918, xxi, 84.

Transplantation of fatty tissue into the spleen. Y. MATSUOKA. J. Pathol. & Bacteriol., 1918, xxi, 493.

The effect of infection with staphylococci, streptococci, and tubercle bacilli on bone-marrow transplanted into the spleen. Y. MATSUOKA. J. Pathol. & Bacteriol., 1918, xxi, 501.

Operative treatment of tuberculosis of the spleen. E. PETERSEN. Hosp.-Tid., Københ., 1918, lxi, 1073.

A note on the surgical treatment of certain diseases by splenectomy. J. SHERREN. Ann. Surg., Phila., 1918, lxviii, 379. [133]

Miscellaneous

Avoidable traumatic abdomen. J. B. DEAVER. J. Am. M. Ass., 1918, lxxi, 1120.

Acute indigestion. S. D. MOLYNEUX. Penn. M. J., 1918, xxii, 17.

A clinical lecture on the acute abdomen. D. N. EISENDRATH. Surg. Clin. Chicago, 1918, ii, 933.

Visceroptosis; a new operation for its relief. J. R. GOFFE. J. Am. M. Ass., 1918, lxxi, 1107.

Colloid carcinoma. M. W. ROAN. J.-Lancet, 1918, xxxviii, 567.

Acute massive hepatonephritis. J. TAPIE. Presse méd., Par., 1918, xxvi, 534.

SURGERY OF THE EXTREMITIES

Diseases of Bones, Joints, Muscles, Tendons—General Conditions Commonly Found in the Extremities

Case of rheumatoid arthritis treated by ionization of periodontal membrane. E. STURRIDGE. Proc. Roy. Soc. Med., 1918, xi, Sect. Odontol., 112.

Tibial osteomyelitis in a child mistaken for rheumatismal arthritis. E. KIRMISSON. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 680.

Purulent knee arthritis; lateral arthrotomy and Finochietto's stirrup. BÉRARD and DUNET. Lyon méd., 1918, cxxvii, 420.

The teeth and tonsils as causative factors in arthritis. R. HAMMOND. Am. J. M. Sc., 1918, clvi, 541.

Epithelioma of the leg. A. D. BEVAN. Surg. Clin. Chicago, 1918, ii, 905.

A case of gangrene of the leg; probably due to angiospasm. E. JEFFREY. Med. J. Australia, 1918, ii, 326.

The use of Unna's dressing in the treatment of leg ulcers. H. E. HAPPEL. J. Missouri St. M. Ass., 1918, xv, 360.

Bilateral congenital radio-ulnar synostosis. S. W. BOORSTEIN. Am. J. Surg., 1918, xxxii, 220. [134]

Bone regeneration and transplants. R. AVANZI. Stomatologia, Milano, 1918, xvi, 193.

Sequestra in war injuries. T. L. BUNTING. Arch. Radiol. & Electrotherap., 1918, xxiii, 105.

Osteitis of war. J. DUMAS and H. MALARTIC. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1424. [134]

An investigation of human bone and joint tuberculosis. A. S. GRIFFITH. J. Pathol. & Bacteriol., 1918, xxi, 54.

The knee. J. W. WARD. Pacific Coast J. Homœop., 1918, xxix, 483.

Gunshot wounds of the knee-joint as seen at a base hospital. H. H. HEPBURN. Brit. M. J., 1918, ii, 338. [135]

Extra-articular tuberculosis of the patella. H. MAYET. Paris chirurg., 1918, x, 24.

Wobbly knee much improved after pericapsular injections of zinc chloride. P. MAUCLAIRE. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1377.

Angular ankylosis of the knee-joint of tuberculous origin; corrective resection. A. CEBALLOS. Semana méd., Buenos Aires, 1918, xxv, 281.

The apex of the patella is extra-articular. G. LEO. Paris chirurg., 1918, x, 40.

A case of hæmophilia with effusion into the knee-joints. P. B. ROTH. Proc. Roy. Soc. Med., 1918, xi, Sect. Dis. Child., 40.

Stiff knee without bony ankylosis following gunshot and its treatment. M. KATZENSTEIN. Deutsche med. Wchnschr., 1918, xliv, 1045.

Giant-cell growth of bone and tendon sheath. L. W. ELY. Ann. Surg., Phila., 1918, lxviii, 426.

Bone growth and bone repair. A. KEITH. Brit. J. Surg., 1918, vi, 160.

Treatment of Little's disease. E. GASNE. Rev. d'orthop., Par., 1918, vi, 219.

Coxa vara and obesity. E. KIRMISSON. Rev. d'orthop., Par., 1918, vi, 241.

Restoration of function to stiff fingers. M. LANGWORTHY. Am. J. Orthop. Surg., 1918, xvi, 365. [135]

The rehabilitation of dead bone area and its importance in the repair of open fractures. R. LERICHE and A. POLICARD. Presse méd., Par., 1918, xxvi, 479.

Syphilitic elephantiasis of the genitals. LEVY-BING and GERBAY. Ann. d. mal. vén., Par., 1918, xiii, 600.

Recent studies in the anatomy and physiology of tendons; their application to the technique of tendon operations. L. MAYER. J. Am. M. Ass., 1918, lxxi, 1198.

Isolated disease of the scaphoid. C. R. MCCLURE. J. Am. M. Ass., 1918, lxxi, 1360.

Cystic and fibrocystic disease of the long bones. W. H. MEYERDING. Am. J. Orthop. Surg., 1918, xvi, 367. [136]

Spur-like formations of bone following amputation. J. D. MORGAN. Arch. Radiol. & Electrotherap., 1918, xxiii, 154. [136]

An efficient support for sacro-iliac relaxation. W. B. OWEN. J. Am. M. Ass., 1918, lxxi, 1112.

Some of the more important bone diseases as demonstrated by the X-ray. R. L. PITTMAN. Charlotte M. J., 1918, lxxviii, 158.

A unique case of rheumatism and its management. W. H. PORTER. Med. Rec., 1918, xciv, 627.

Cure of incipient coxalgia without ankylosis. M. POUSSONNIER. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 580.

Rheumatism. W. E. PREBLE. Interst. M. J., 1918, xxv, 764.

The preparation of dry museum specimens of bone for the War Office Collection. G. RICHARDSON. J. Pathol. & Bacteriol., 1918, xxi, 491.

Interstitial hæmorrhage due to intramuscular injections. SAINZ DE AJA. Med. Ibera, 1918, v, 75.

Clinical lecture on ischæmic myositis. J. P. STEWART. Brit. M. J., 1918, ii, 151. [137]

Paget's disease of the bones. B. STIVELMAN and E. L. RAY. N. Y. M. J., 1918, cviii, 678.

The army shoe and mild foot disabilities. J. T. RUGH. J. Am. M. Ass., 1918, lxxi, 1215.

The foot in health and disease. H. KELLER. Med. Rec., 1918, xciv, 673.

Boot heels as a cause of flat-foot, soldier's heart, and myalgia. S. D. FAIRWEATHER. Brit. M. J., 1918, ii, 313. [138]

Should frozen feet be amputated? MARIAU. Paris chirurg., 1918, x, 53.

Fractures and Dislocations

The relative values of fractured bones and injured adjacent soft parts. E. R. CORSON. Internat. J. Surg., 1918, xxxi, 330.

Dislocation of carpal semilunar bone. R. E. HOYT. U. S. Nav. M. Bull., 1918, xii, 701.

Luxations of the shoulder. HARTMANN. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 627.

Results of primary excision for wounds of the elbow-joint. A. E. MOORE. Brit. J. Surg., 1918, vi, 265.

Non-operative treatment of fractures of the neck of the humerus. B. F. JACKSON and D. B. FAUST. Internat. J. Surg., 1918, xxxi, 336.

War fractures of the forearm. E. DESTOT. Paris méd., 1918, viii, 133.

Extraction of a bullet from the head of the femur under radioscopic control. DUVERGEY and DUFOUR. Arch. d'électric. méd., Par., 1918, xxvi, 352.

A method for the immediate treatment of fracture of the femur on the battlefield at the site of the casualty. F. B. CHAVASSE. Brit. M. J., 1918, ii, 373. [138]

Fractures and articular war injuries of the lower limbs. L. NEGRI. Osp. maggiore, Milano, 1918, vi, 51.

Fractures of the lower extremity. G. B. KUNKLE. Internat. J. Surg., 1918, xxxi, 327.

The three-stage treatment of large comminutive bursting diaphyseal fractures. R. LERICHE and A. POLICARD. Presse méd., Par., 1918, xxvi, 533.

Mechanical derangement of the knee-joint. M. S. HENDERSON. J.-Lancet, 1918, xxxviii, 523. [138]

Some causes of functional disability following fractures. H. W. DACHTLER. Am. J. Roentgenol., 1918, v, 457.

Affections of the large joints due to gunshot wounds; treatment. S. W. DAW. Brit. J. Surg., 1918, vi, 190.

Reduction of the angular displacements of fractures. GENTIL. Presse méd., Par., 1918, xxvi, 536.

Ununited fractures, with special reference to gunshot injuries and the use of bone grafting. E. W. H. GROVES. Brit. J. Surg., 1918, vi, 203.

Fractures in warfare. A. LANE. Practitioner, Lond., 1918, ci, 181. [139]

Weight extension in the treatment of war fractures. W. H. OGILVIE. Brit. J. Surg., 1918, vi, 166.

War fracture methods applicable to peace. B. RAIMOND. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 675.

Precautions to be observed in the treatment of fractures. A. R. ROZAR. Internat. J. Surg., 1918, xxxi, 337.

The diagnosis and treatment of injuries to the crucial ligaments. S. A. SMITH. Brit. J. Surg., 1918, vi, 176.

Surgery of the Bones, Joints, Etc.

Disinfection of the knee-joint. R. B. COFIELD. J. Am. M. Ass., 1918, lxxi, 1286.

Three cases of intervention on the knee-joint with immediate closure. BARBARIN and GAULIER. Paris chirurg., 1918, x, 38.

Resection of the knee for a white tumor. BEGOUIN. Gaz. hebd. d. sc. méd., Bordeaux, 1918, xxxix, 151.

Teno-peritendinous transposition; an improved technique for tendon transplantation. M. A. BERNSTEIN. Surg. Clin. Chicago, 1918, ii, 1057.

Large intra-articular foreign body removed by arthrotomy. H. BLANC. Paris chirurg., 1918, x, 27.

Osteosynthesis in articular fractures. P. O. BOLO. Semana méd., Buenos Aires, 1918, xxv, 407.

Metal wire suturing in osteosynthesis. G. EGIDI. Policlin., Roma, 1918, xxv, sez. prat., 1077.

General technique for cineplastic amputations. G. BOSCH ARANA. Semana méd., Buenos Aires, 1918, xxv, 201.

Operative mobilization of ankyloses of the lower limb. A. CEBALLOS. Semana méd., Buenos Aires, 1918, xxv, 416.

Primary osteosynthesis in the treatment of recent war fractures. DUPUY DE FRENELLE. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 595.

Deep cutanization of bone in the treatment of chronic osteomyelitis. G. JEAN. Presse méd., Par., 1918, xxvi, 452. [141]

Immediate osteoplasty after bone evacuations to fill cavities caused by them. R. LE FUR. Paris chirurg., 1918, x, 68.

The vicious scars of war wounds and their surgical orthopedic treatment. MÉRIEL. Rev. d'orthop., Par,. 1918, vi, 203. [141]

Bone grafting in war surgery. NEUMANN, GERNEZ, and AUTEPAGE. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1291. [141]

Two cases of wobbly hip treated by operative reposition. G. NOVÉ-JOSSERAND. Rev. d'orthop., Par., 1918, vi, 1917.

Bilateral Gritti-Stokes amputation. A. J. OCHSNER. Surg. Clin. Chicago, 1918, ii, 1080.

Notes on excisions of septic joints. R. B. OSGOOD. Am. J. Orthop. Surg., 1918, xvi, 323. [142]

Treatment of ankylosis of the elbow-joint. J. F. STEEDMAN. Brit. M. J., 1918, ii, 433.

Orthopedic operations on the hand. A. STEINDLER. J. Am. M. Ass., 1918, lxxi, 1288. [142]

Skin flaps for closing bone defects following osteomyelitic foci. D. THÉVENARD. Presse méd., Par., 1918, xxvi, 515. [142]

Orthopedics in General

Remarks on an apparatus for the amputated. BEAUGRAND. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 593.

An artificial hand for forearm amputations. FROELICH. Rev. d'orthop., Par., 1918, vi, 255.

An artificial thumb. BÉRARD and DUNET. Lyon méd., 1918, cxxvii, 421.

The treatment of disabilities of the upper extremity in military surgery. N. DUNN. Brit. J. Surg., 1918, vii, 248.

Recent advances in the surgical treatment of poliomyelitis. J. E. FULD. Internat. J. Surg., 1918, xxxi, 322.

The foot problem. T. S. MEBANE. Mil. Surgeon, 1918, xliii, 377. [143]

The treatment of neglected club-feet. C. A. PARKER. Surg. Clin. Chicago, 1918, ii, 1049.

The principles of military orthopedics. A. W. SHEEN. Indian M. Gaz., 1918, liii, 328.

SURGERY OF THE SPINAL COLUMN AND CORD

The treatment of vertebral and pelvic injuries. C. SCHLATTER. Deutsche med. Wchnschr., 1918, xliv, 1041.

Crushing vertebral fracture; report of a case, including a brief review of recent literature. C. B. SPALDING. Am. J. Surg., 1918, xxxii, 244.

Fracture of the spinal column with and without cord injury. N. SHARPE. J. Am. M. Ass., 1918, lxxi, 1362.

Typhoid spine. W. OSLER. Bull. Canad. Army M. Corps, 1918, i, 78.

The importance of care in the diagnosis of back conditions. J. A. NUTTER. Am. J. Orthop. Surg., 1918, xvi, 351. [143]

Fracture of atlas with Brown-Séquard syndrome. MOUISSET and ARLOING. Lyon méd., 1918, cxxvii, 422.

Contusion and injury with partial section of spinal medulla operated upon and cured. E. MONTANA and M. G. RUEDA. Repert. de med. y cirug., Bogotá, 1918, ix, 623.

The clinical value of the Albee operation in Pott's disease. D. MARAGLIANO. Policlin., Roma, 1918, xxv, sez. chir., 257, 289. [144]

Resection of the sacrum for chronic osteitis following a wound of the sacral region. R. LE FUR. Paris chirurg., 1918, x, 74.

Atlas and axis luxation. C. M. JACOBS. Am. J. Orthop. Surg., 1918, xvi, 357.

Treatment of vertebral tuberculosis by fusion operation; report of 210 cases. R. A. HIBBS. J. Am. M. Ass., 1918, lxxi, 1372.

Case of spina bifida with lesion of the sacral medulla. R. S. ELIA. Semana méd., Buenos Aires, 1918, xxv, 383.

Radiographic study of chronic lumbar rheumatism. DESPLATS and RAYNAL. Arch. d'électric. méd., Par., 1918, xxvi, 342.

Compression fractures of the spine, with report of cases. C. D. CLEGHORN. Internat. J. Surg., 1918, xxxi, 334.

Direct commotion of the spinal cord. H. CLAUDE and T. L'HERMITTE. Presse méd., Par., 1918, xxvi, 514.

Tumors of the spinal dura. G. C. BOLTEN. Nederl. Tijdschr. v. Geneesk., 1918, ii, 450.

Occult spina bifida in an adult. BABOUNEIX and DEBÈYRE. Paris méd., 1918, viii, 158.

SURGERY OF THE NERVOUS SYSTEM

Suture of the musculospiral nerve; three cases. G. WILLIAMS. Brit. J. Surg., 1918, vi, 315.

Injuries to the peripheral nerves as observed in soldiers returned to this country for reconstruction work and care. A. GIBSON. J.-Lancet, 1918, xxxviii, 585. [144]

The repair of large gaps in peripheral nerves by neuroplasty. K. A. J. MACKENZIE. Surg., Gynec, & Obst., 1918, xxvii, 353. [146]

Injuries of the peripheral nerves. H. S. SOUTTAR and E. W. TWINING. Brit. J. Surg., 1918, vi, 279.

The value of the gluteal sign in the diagnosis of sciatic neuralgia. F. ROSE. Med. Press, 1918, cvi, 270.

Apparatus for nerve prosthetics. A. MOUCHET and G. ANGEAU. Rev. d'orthop., Par., 1918, vi, 263.

Some notes on operative procedure in nerve injuries. R. KENNEDY. Brit. J. Surg., 1918, vi, 317.

Orthopedic treatment of nerve lesions. W. G. ERVING. Am. J. Orthop. Surg., 1918, xvi, 346. [146]

Experimental research on the protection of nerve wounds. A. CORTI. Chir. d. org. d. mov., Bologna, 1918, ii, 323. [146]

Paralysis of musculospiral nerve from pressure of rifle strap while firing. J. C. ADAMS. U. S. Nav. M. Bull., 1918, xii, 708.

MISCELLANEOUS

Clinical Entities—Ulcers, Abscesses, Etc.

Multiple skin metastases from cancer of internal organs. N. SUZUKI. J. Cancer Research, 1918, iii, 357.

Occupational cancer. H. C. ROSS. J. Cancer Research, 1918, iii, 321.

Treatment by radium of cancerous mucous membranes. H. H. JANEWAY. Am. J. Roentgenol., 1918, v, 414. **[147]**

Actual state of the study of cancer. ARROYA y NAVARRO. Prog. de los clin., Madrid, 1918, vi, 95.

Fluctuations in the growth energy of malignant tumors in man, with especial reference to spontaneous recession. G. L. ROHDENBURG. J. Cancer Research, 1918, iii, 193.

Multiple primary malignant tumors; with report of a case of carcinoma and sarcoma in the same individual. R. H. MAJOR. Bull. Johns Hopkins Hosp., 1918, xxix, 223. **[147]**

Congenital tumor of the sacrococcygeal region. C. LUGONES. Semana méd., Buenos Aires, 1918, xxv, 159.

The influence of heat and radium upon induced immunity against transplanted animal tumors. G. L. ROHDENBURG and F. D. BULLOCK. J. Cancer Research, 1918, iii, 181. **[148]**

Atrophy of tumors through diet. E. CENTANNI. Policlin., Roma, 1918, xxv, sez. prat., 1005.

Neurofibromatosis. SCHULTZE. Deutsche med. Wchnschr., 1918, xliv, 1037.

Histologic study of a rapidly developing fibroma. A. SIREDEY. Ann. de gynéc. et d'obst., Par., 1918, lxxii, 166.

Report of a case of cavernous hæmangioma. C. W. SMITH. U. S. Nav. M. Bull., 1918, xii, 704.

The treatment of atonic ulcers. A. PERERA. Prog. de los clin., Madrid, 1918, vi, 91.

The formation of bone in a calcified epithelioma of the skin, with some remarks on metaplasia. G. W. NICHOLSON. J. Pathol. & Bacteriol., 1917, xxi, 287.

Collosol manganese in furunculosis and sebeorrhœa. E. W. KIRK. Brit. M. J., 1918, ii, 377.

A case of multiple sebaceous cysts. G. A. GRAY. U. S. Nav. M. Bull., 1918, xii, 722.

Rodent ulcer. W. BEATTY. Boston M. & S. J., 1918, clxxix, 527.

The irritant nature of war scar tissue. E. M. CORNER. Proc. Roy. Soc. Med., 1918, xi, Sect. Electrotherap., 49.

Shock. W. B. CANNON. Progrès méd., Par., 1918, p. 290. **[148]**

An element in the diagnosis of different states of shock. R. MOULINIER. Gaz. hebd. d. sc. méd., Bordeaux, 1918, xxxix, 149.

Studies on experimental surgical shock. F. C. MANN. Am. J. Physiol., 1918, xlvii, 231. **[149]**

Further experimental study of surgical shock. F. C. MANN. J. Am. M. Ass., 1918, lxxi, 1184.

The latent period of shock. D. BARUCH. Arch. méd. belges, 1918, lxxi, 369.

The nature of shell-shock. F. DILLON. Bull. Canad. Army M. Corps., 1918, i, 79.

The nature and treatment of surgical shock. E. H. STARLING. Arch. méd. belges, 1918, lxxi, 369. **[150]**

Intravenous camphorated oil in the treatment of shock. H. COSTANTINI and M. VIGOT. Bull. méd., Par., 1918, xxxii, 399.

Discussion of pulmonary fat embolism and its relation to traumatic shock. G. E. SUTTON. Brit. M. J., 1918, ii, 368.

The breaking of vicious circles by surgery. J. B. HURRY. Practitioner, Lond., 1918, ci, 225.

Proceedings of Twenty-Seventh French Surgical Congress. Presse méd., Par., 1918, xxvi, 528, 537.

The uræmia of war wounds. H. REYNES. Bull. Acad. de méd., Par., 1918, lxxx, 308.

A method of suturing Y-shaped wounds. J. C. EGEBERG. Calif. St. J. Med., 1918, xvi, 464.

Juvenile peripheral gangrene in infectious diseases; diphtheria. F. ROBBINS. Med. Rec., 1918, xciv, 620.

A study of dystrophy adiposa genitalis in women. E. A. SCHUMANN. Am. J. Obst., N. Y., 1918, lxxviii, 428. **[150]**

Functional methods for studying diseased conditions of certain internal secretory organs; the endocrinopathies. J. ROSENBLOOM. Interst. M. J., 1918, xxv, 721.

The primary myopathies and their endocrine relationship. S. P. GOODHART. Med. Clin. N. Am., 1918, ii, 259.

Status thymus lymphaticus. E. F. GARRAGHAN. Illinois M. J., 1918, xxxiv, 189.

The antagonistic action of adrenalin and hypophyseal extracts. B. A. HOUSSAY. Presse méd., Par., 1918, xxvi, 513.

A more intensive form of arsphenamin therapy. H. H. HAZEN. Am. J. Syph., 1918, ii, 778.

Structure and function. J. A. GILBERT. Med. Sentinel, 1918, xxvi, 490.

A case of Hodgkin's disease. T. H. R. MATHEWSON. Med. J. Australia, 1918, ii, 286.

Acidosis, its cause and treatment. C. D. WALTZ. N. Y. M. J., 1918, cviii, 585.

The chemical constitution of pus. A. DEMOLON. Presse méd., Par., 1918, xxvi, 443. **[150]**

Treatment of burns by paraffin and ambrine. V. DEFELICE. Semana méd., Buenos Aires, 1918, xxv, 262.

The nature and interpretation of the colloidal gold reaction. K. M. VOGEL. Arch. Int. Med., 1918, xxii, 496.

Hypodermic use of olive oil. V. CESARIS. Osp. maggiore, Milano, 1918, vi, 46.

The electrophysics of ionic medication. H. H. U. CROSS. Arch. Radiol. & Electrotherap., 1918, xxiii, 149.

Notes on cases treated with radium. J. C. VAUGHAN. Indian M. Gaz., 1918, liii, 333.

Internal use of radium. D. C. MORIARTA. Med. Rec., 1918, xciv, 586.

Some phases of radium action, with special reference to the hæmatopoietic system. J. A. P. MILLET and T. MUELLER. J. Cancer Research, 1918, iii, 127. **[151]**

Some observations and results in the treatment of 400 cases with radium. R. DUNCAN. Med. Rec., 1918, xciv, 617.

Fulguration and roentgenotherapy in malignancy. J. H. EDMONSON. South. M. J., 1918, xi, 665.

Surgical diathermy. E. P. CUMBERBATCH. Proc. Roy. Soc. Med., 1918, xi, Sect. Electrotherap., 37.

Phlegmon causing Jackson's syndrome. H. ALOIN. Paris méd., 1918, viii, 209.

Some of our medical explorers and adventurers. W. BROWNING. Med. Rec., 1918, xciv, 712.

Sera, Vaccines, and Ferments

Preliminary report upon new methods for the production of antistreptococcal sera. A. H. CAULFEILD. J. Pathol. & Bacteriol., 1917, xxi, 28.

The influence of temperature on the fixation of complement. H. R. DEAN. J. Pathol. & Bacteriol., 1917, xxi, 193.

The influence of immune serum upon the reactions about transplanted tissues. M. S. FLEISHER. J. Med. Research, 1918, xxxix, No. 1. [151]

Further consideration of complement fixation in tuberculosis. V. H. MOON. J. Am. M. Ass., 1918, lxxi, 1127.

A report on the use of Dixon's fluid (tuberculin) in the Pennsylvania state tuberculosis dispensaries. F. F. D. RECKORD. Penn. M. J., 1918, xxii, 10.

Study of the tuberculin reaction of Piquet, Mantoux and Hamburger in 350 children. J. P. GARRAHAN and L. IRAOLA. Semana méd., Buenos Aires, 1918, xxv, 389.

An endeavor to increase the potency of low titer anti-sheep amboceptor by means of chemical fractionation. R. GILBERT and A. I. VAN SAUN. Am. J. Syph., 1918, ii, 755.

The amino-acid content of nutrient media. I. W. HALL, A. CAMPBELL, and I. HILES. Brit. M. J., 1918, ii, 398.

Serotherapy of gangrene of war wounds. I. MAIRESSE and I. REGNIER. Presse méd., Par., 1918, xxvi, 461. [152]

The preventive and curative treatment of gas gangrene by mixed serums. F. IVENS. Brit. M. J., 1918, ii, 425.

Serum diagnosis of syphilis and gonorrhœa employing human complement. J. A. KOLMER. Am. J. Syph., 1918, ii, 739.

Ten thousand Wassermann tests made in the Philadelphia General Hospital during 1916 and 1917. R. C. ROSENBERGER. N. Y. M. J., 1918, cviii, 584.

The debatable phases of the Wassermann technique. E. A. VICTORS. Am. J. Syph., 1918, ii, 758.

The colloidal nature of the Wassermann reaction. R. M. WALKER. J. Pathol. & Bacteriol., 1917, xxi, 184.

Blood

Acidosis and hydrogen-ion concentration. W. M. BAYLISS. Brit. M. J., 1918, ii, 375.

The differential count in syphilis. A. BLUMBERG. Am. J. Syph., 1918, ii, 734.

The use of oxalated and citrated blood for routine class study. F. H. FALLS. J. Am. M. Ass., 1918, lxxi, 1379.

Certain unrecognized septicæmias. GAULEJAC and NATHAN. Bull. Acad. de méd., Par., 1918, lxxx, 269.

Isolation of the streptococcus mitior seu viridans with cultures. R. MORAGAS. Rev. de cien. méd. Barcelona, 1918, xliv, 321.

Case of hæmophilia. E. PRITCHARD. Proc. Roy. Soc. Med., 1918, xi, Sect. Dis. Child., 37.

A survey of the hæmorrhagic diseases, with especial reference to blood findings. R. OTTENBERG. Med. Clin. N. Am., 1918, ii, 289.

Report of three cases of secondary arterial hæmorrhages. T. SALVATORE. Policlin., Roma, 1918, xxv, sez. prat., 737.

Normal isohæmagglutinins; their occurrence in human blood and their relation to blood transfusion. S. W. SAPPINGTON and J. S. SEITZ. Hahneman. Month., 1918, liii, 536.

Notes on the transfusion of citrated blood. E. HÉDON. Med. Press, 1918, cvi, 234. [152]

Blood transfusion at the front area. B. I. HARRISON. J. Am. M. Ass., 1918, lxxi, 1403.

Indications for blood transfusion. H. S. FORGRAVE. Med. Herald, 1918, xxxvii, 263.

The technique of blood transfusions. G. EGIDI. Policlin., Roma, 1918, xxv, sez. prat., 69.

Transfusion of blood. J. I. BYRNE. Med. Herald, 1918, xxxvii, 264.

The Agote method of blood transfusion. L. AGOTE. Anal. d. Inst. mod. de clin. méd., Buenos Aires, 1918, iii, 1. [152]

Blood and Lymph Vessels

Four cases of arteriovenous aneurisms treated by total extirpation. BÉRARD and DUNET. Lyon méd., 1918, cxxvii, 417.

Rupture of popliteal aneurism following the administration of salvarsan. F. J. DEVER and R. S. BOLES. U. S. Nav. M. Bull., 1918, xii, 715.

The administration of concentrated intravenous injections of novarsenobenzol in the treatment of syphilis. S. E. DORE. Practitioner, Lond., 1918, ci, 209.

Intravenous injections of arsenious and mercuric iodides in syphilis and yaws. R. L. SPITTEL. Practitioner, Lond., 1918, ci, 212.

Aneurism of the femoral artery and vein manifesting itself three and one-half years after injury. HOFFMANN. Deutsche med. Wchnschr., 1918, xliv, 1079.

Etiology of thrombo-angiitis obliterans. W. MEYER. J. Am. M. Ass., 1918, lxxi, 1268.

Pathologic findings of arterial hæmatoma in relation to the origin of traumatic aneurisms. G. NEGRONI. Osp. maggiore, Milano, 1918, vi, 27.

Aneurism of the ascending portion of the aorta. E. ODRIOZOLA. Ann. d. Fac. de méd., Lima, 1918, i, 101.

Arteriovenous aneurism of the subclavian vessels; extirpation after temporary disarticulation of the clavicle. L. SENCERT. Bull. Acad. de méd., Par., 1918, lxxx, 114. [153]

Diffuse arterial aneurism by injury of femoral artery. M. VINAS. Semana méd., Buenos Aires, 1918, xxv, 337.

The technique of large intravenous injections. C. H. WHITEFORD. Practitioner, Lond., 1918, ci, 216.

Poisons

Myrtol poisoning; with comments upon the toxicity of eucalpytus oil and myrtol in human beings and in animals. L. F. BARKER and L. G. ROWNTREE. Bull. Johns Hopkins Hosp., 1918, xxix, 215.

The treatment of surgical erysipelas by iodine tincture. BASSET and LECHELLE. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1408. [153]

Tuberculosis. E. M. WICKSTROM. Med. Sentinel, 1918, xxvi, 499.

An investigation of strains of tubercle bacilli from animal tuberculosis. A. S. GRIFFITH. J. Pathol. & Bacteriol., 1917, xxi, 329.

Heliotherapy of tuberculosis. P. B. MIDDENDORP. Nederl. Tijdschr. v. Geneesk., 1918, ii, 427.

Heliotherapy in the treatment of external tuberculosis. M. CAZIN. Paris chirurg., 1918, x, 1.

Tetanus infection. J. DALAND. U. S. Nav. M. Bull., 1918, xii, 802.

A death from anthrax. H. B. LEHMBERG. U. S. Nav. M. Bull., 1918, xii, 801.

Anthrax. A. D. DYE. Hahneman. Month., 1918, liii, 616.

Idiopathic bacillus aerogenes capsulatus infection. H. GREELEY. Bull. Johns Hopkins Hosp., 1918, xxix, 231.

An investigation of the cultural reactions of certain anaerobes found in wounds. H. HENRY. J. Pathol. & Bacteriol., 1917, xxi, 344.

Some streptothrixes isolated from tumors. A. S. LEYTON and H. G. LEYTON. J. Pathol. & Bacteriol., 1917, xxi, 47.

The physical factors influencing infection. W. MARTIN. Ann. Surg., Phila., 1918, lxviii, 436.

The vitality of the gonococcus. V. MORAX. Ann. de l'Inst. Pasteur, Par., 1918, xxxii, 471.

Acute poisoning by five grains of acetylsalicylic acid — aspirin. E. P. SHELBY. J. Am. M. Ass., 1918, lxxi, 1381.

Contributions to the biochemistry of pathogenic anaerobes. C. G. L. WOLF and J. E. G. HARRIS. J. Pathol. & Bacteriol., 1917, xxi, 386.

Surgical Diagnosis, Pathology and Therapeutics

Exploratory puncture of cancer. H. T. DEELMAN. Nederl. Tijdschr. v. Geneesk., 1918, ii, 744.

The general diagnostic study by the internist co-operating with groups of medical and surgical specialists. L. F. BARKER. N. Y. M. J., 1918, cviii, 577.

The evolution of free grafts. IMBERT. Bull. Acad. de méd., Par., 1918, lxxx, 257.

Minor surgery. L. S. TAMARGO. Med. Ibera, 1918, v, 50.

Experimental Surgery and Surgical Anatomy

The anatomy and physiology of the stomach. A. L. BENEDICT. Am. J. Clin. Med., 1918, xxv, 758.

Physiology of the intracranial circulation. J. J. R. MACLEOD. Canad. M. Ass. J., 1918, viii, 865.

Roentgenology

A few facts in regard to modern X-ray therapy. R. F. BELLAIRE. Minnesota Med., 1918, i, 380. **[153]**

A simple method of X-ray localization. D. B. MCGRIGOR. J. Roy. Army M. Corps, 1918, xxxi, 236.

A portable "Snook" apparatus; a transformer for heating current of the Coolidge tube. E. E. BURNSIDE. Proc. Roy. Soc. Med., 1918, xi, Sect. Electrotherap., 58.

Roentgen ray protective materials. W. S. GORTON. Am. J. Roentgenol., 1918, v, 472.

X-ray treatment of fibroid tumors. E. H. GRUBBE. Clinique, Chicago, 1918, xxxix, 409.

A mobile X-ray wagon unit. H. C. HEAD. Proc. Roy. Soc. Med., 1918, xi, Sect. Electrotherap., 56.

The use of the X-ray in the examination of the heart. G. W. HOLMES. Boston M. & S. J., 1918, clxxix, 478.

The instruction of war roentgenologists. R. LEDOUX-LEBARD. Am. J. Roentgenol., 1918, v, 451.

Rapid method of forceps extraction of projectiles under the screen. L. MOREAU. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 662.

Different methods of X-ray localization of foreign bodies. W. SEITZ. Deutsche med. Wchnschr., 1918, xliv, 1020.

A method of preventing dust from getting between the fluorescent screen and the lead glass. D. STONE. Arch. Radiol. & Electrotherap., 1918, xxiii, 161.

The use of sodium bromide in roentgenography. E. H. WELD. J. Am. M. Ass., 1918, lxxi, 1111.

Hospital, Medicolegal and Medical Education

State responsibility and aims in county health work. J. N. HURTY. J. Am. M. Ass., 1918, lxxi, 1377.

The different phases of work to be done by whole time county health officer and county organizer. G. G. ALTMAN. South. M. J., 1918, xi, 675.

Neurology and the medical curriculum. E. BRAMWELL. Edinb. M. J., 1918, xxi, 209.

The teaching of psychology to medical undergraduates. R. D. CLARKSON. Edinb. M. J., 1918, xxi, 240.

The training of the student of medicine. J. J. GRAHAM-BROWN. Edinb. M. J., 1918, xxi, 207.

Psychology and the medical curriculum. B. HART. Edinb. M. J., 1918, xxi, 213.

The teaching of mental diseases in Edinburgh. G. M. ROBERTSON. Edinb. M. J., 1918, xxi, 225.

The training of the student of medicine. T. A. ROSS. Edinb. M. J., 1918, xxi, 231.

The training of the surgeon. J. HALPENNY. Canad. M. Ass. J., 1918, viii, 896.

What is the purpose of the modern dispensary and outpatient service? J. F. BRESNAHAN. Interst. M. J., 1918, xxv, 754.

Teaching in the hospital. J. RANSOHOFF. Interst. M. J., 1918, xxv, 749.

Hospital standardization. J. G. BOWMAN. Interst. M. J., 1918, xxv, 734.

The need of standardization of hospitals for the insane. W. C. SANDY. Interst. M. J., 1918, xxv, 739.

Why should autopsies be held? The argument to be used with relatives and friends. M. T. BURROWS. Interst. M. J., 1918, xxv, 760.

Early laryngology in Philadelphia. J. S. COHEN. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 862.

Outline of a course in orthopedics for nurses. G. E. DEERING. Trained Nurse & Hosp. Rev., 1918, lxi, 200.

Laparotomy throughout the ages. DURODIÉ. J. de méd., Bordeaux, 1918, lxxxix, 233.

Medicosurgical laboratories. N. FIESSINGER. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 633.

Consumption in Harvey's time and today. P. KIDD. Brit. M. J., 1918, ii, 455.

Medical supervision of the coal tar industries. F. G. MOHLAU. Buffalo M. J., 1918, lxxiv, 79.

Objections to compulsory health insurance. E. H. OCHSNER. Med. Economist, 1918, vi, 199.

The province of the medical ethics. G. PARKER. Edinb. M. J., 1918, xxi, 191.

Examination of employees. V. A. PAUL. J. Am. Inst. Homœop., 1918, xi, 404.

A plea for better co-operation between physicians and dentists. C. H. WAKE. Calif. St. J. Med., 1918, xvi, 466.

The past and present of operative dentistry. B. H. SMITH. Dental Cosmos, 1918, lx, 884.

Physical therapeutics; roentgen ray society. R. H. STEVENS. J. Am. Inst. Homœop., 1918, xi, 409.

First 100 operations performed in Charity Hospital. C. VITALE. Semana méd., Buenos Aires, 1918, xxv, 423.

The physician and the public. H. L. WINTER. N. Y. St. J. Med., 1918, xviii, 418.

MILITARY SURGERY

From soldier to civilian. F. J. CHAPPLE. Med. J. Australia, 1918, ii, 321.

Convoys and their care; the admitting section of an evacuation hospital during combat. G. DE TARNOWSKY. J. Am. M. Ass., 1918, lxxi, 1303.

Organization and objects of the medical research board, air service, U. S. Army. Y. HENDERSON and E. G. SEIBERT. J. Am. M. Ass., 1918, lxxi, 1382.

Analysis of causes of breakdown in flying, nervous mechanism. N. S. GILCHRIST. Brit. M. J., 1918, ii, 401.

Influence of altitude on the hearing and the motion-sensing apparatus of the ear. E. R. LEWIS. J. Am. M. Ass., 1918, lxxi, 1398.

The aviation service of the medical department of the army. T. C. LYSTER. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 851.

The wax-modeling department of the Army Medical Museum of the Surgeon-General's office and the application of the art to general medicine. R. W. SHUFELDT. Med. Rec., 1918, xciv, 663.

The new Army Medical Museum on the map. R. W. SHUFELDT. Med. Rev. Revs., 1918, xxiv, 596.

The new Surgeon-General of the United States Army. N. Y. M. J., 1918, cviii, 597.

Keep Gorgas on outpost duty. G. H. BOGART. Med. Herald, 1918, xxxvii, 267.

The medical profession in the war. F. H. MARTIN. J. Indiana St. M. Ass., 1918, xi, 361.

Some aspects of military ophthalmology. S. H. MCKEE. Brit. M. J., 1918, ii, 340. **[154]**

Improving the sight of soldiers and sailors and relieving pain. W. H. BATES. N. Y. M. J., 1918, cviii, 639.

Re-education of the blinded soldier. E. K. ENGLAND. Am. J. Clin. Med., 1918, xxv, 744.

Blinded soldiers as masseurs in hospitals and sanatoria for reconstruction and rehabilitation of disabled soldiers. S. A. KNOPF. Med. Rec., 1918, xciv, 709.

Preparing the fit soldier for his return to civil life. D. M. KING. Grace Hosp. Bull., 1918, iii, 1.

The functional re-education of the wounded. R. T. MCKENZIE. N. Y. M. J., 1918, cviii, 683.

Social responsibility in the rehabilitation of disabled soldiers and sailors. D. C. MCMURTRIE. Med. Rec., 1918, xciv, 705.

The aged and the war. I. L. NASCHER. Med. Times, 1918, xlvi, 253.

Symposium on war surgery. MANOURY and others. Bull. méd., Par., 1918, xxxii, 411, 426, 436. **[154]**

The surgeons of the civil war. G. W. H. KEMPER. J. Indiana St. M. Ass., 1918, xi, 367.

The woman doctor in the war. B. A. ELLSWORTH. Penn. M. J., 1918, xxii, 23.

Some of the medical lessons of the present war. C. P. HOWARD. J. Iowa St. M. Soc., 1918, viii, 352.

Shell-shock psychoneurosis of war. C. S. HOLBROOK. N. Orl. M. & S. J., 1918, lxxi, 191.

Indiana doctors and the war. J. R. EASTMAN. J. Indiana St. M. Ass., 1918, xi, 359.

Indiana in the war. M. E. FOLEY. J. Indiana St. M. Ass., 1918, xi, 369.

Orthopedic surgery in the zone of advance. K. EMERSON. Am. J. Orthop. Surg., 1918, xvi, 333.

Psychologic observations and methods. K. DUNLAP. J. Am. M. Ass., 1918, lxxi, 1392.

Medical notes from the front. C. G. CUMSTON. N. Y. M. J., 1918, cviii, 595.

The instinct-distortion or war neurosis. D. E. CORR. Boston M. & S. J., 1918, clxxix, 448.

Medical work with the American Expeditionary Forces. R. B. OSGOOD. Mil. Surgeon, 1918, xliii, 369.

The radio-surgical aeroplane "Aerochir." A. NEMIROVSKY and TILMANT. Bull. Acad. de méd., Par., 1918, lxxx, 202. **[156]**

Effects of low oxygen pressure on the personality of the aviator. S. PATON. J. Am. M. Ass., 1918, lxxi, 1396.

Otolaryngology in the army medical service. N. M. PIERCE. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 856.

Rehabilitation of the crippled soldier. H. A. WHITMARSH. J. Am. Inst. Homœop., 1918, xi, 397.

The Cody orthopedic casual detachment. E. A. RICH. Am. J. Orthop. Surg., 1918, xvi, 340.

Filariasis among Australian troops. R. RIMMER. Brit. M. J., 1918, ii, 405.

Physiologic observations and methods. E. C. SCHNEIDER. J. Am. M. Ass., 1918, lxxi, 1384.

Disruptive phenomena in gunshot injuries. S. G. SHATTOCK. Proc. Roy. Soc. Med., 1918, xi, Sect. Otol., 47.

Selective draft regulations and medical advisory boards. F. A. SPAFFORD. J.-Lancet, 1918, xxxviii, 599.

Venereal disease in the Thirty-ninth Division. L. THOMPSON and J. R. BOLASNY. J. Am. M. Ass., 1918, lxxi, 1291.

The communicable diseases of the National Guard and National Army of the United States during the six months from September 29, 1917, to March 29, 1918. V. C. VAUGHAN and G. T. PALMER. Mil. Surgeon, 1918, xliii, 392.

Pneumonia and empyema at Camp Sevier. W. T. VAUGHAN and T. G. SCHNABEL. Arch. Int. Med., 1918, xxii, 440.

Cardiovascular observations. J. L. WHITNEY. J. Am. Ass., 1918, lxxi, 1389.

The effect of altitude on ocular functions. W. H. WILMER and C. BERENS, JR. J. Am. M. Ass., 1918, lxxi, 1394.

Experiences in France. R. D. WILSON. J-Lancet, 1918, xxxviii, 591.

GYNECOLOGY

Uterus

Corrective treatment of congenital cervical stenosis and uterine anteflexion with the Iribarne apparatus. J. IRIBARNE. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 293.

Beck's bismuth paste in the treatment of cervicitis, endocervitis, and endometritis. A. R. HOLLENDER. Wisconsin M. J., 1918, xvii, 181.

Chronic cervicometritis and its treatment by Filhos' caustic. A. ARGONS. Rev. méd. d. Rosario, 1918, viii, 349.

A general consideration of uterine cancer, with special reference to its diagnosis. P. B. BLAND. Am. J. Obst., N. Y., 1918, lxxviii, 554. **[157]**

Radium and uterine cancer. R. SAINZ DE VARANDA. Prensa med. Habana, 1918, ix, No. 92.

Radiotherapy of uterine cancer. G. F. GAARENSTROOM. Nederl. Tijdschr. v. Geneesk., 1918, ii, 727.

Pathogenesis and further growth of carcinoma of the uterus in relation to clinical symptoms and early diagnosis. I. C. RUBIN. Am. J. Obst., N. Y., 1918, lxxviii, 353. **[157]**

Consideration of the malignancy of uterine neoplasms and the etiology of uterine sarcoma. M. BONAFONTE. Arch. de ginec., obst. y pediat., Barcelona, 1918, xxxi, 176.

Final results of X-ray treatment of fibroids of the uterus. J. BRETTAUER. Am. J. Obst., N. Y., 1918, lxxviii, 415. **[157]**

Observation on fibroid tumors of the uterus. E. J. ILL. N. Y. St. J. Med., 1918, xviii, 399. **[157]**

Two hundred and ten fibroid tumors treated by radium. H. A. KELLY. Surg., Gynec. & Obst., 1918, xxvii, 402. **[158]**

Red degeneration of fibroids during and following pregnancy. H. SCHILLER. Am. J. Obst., N. Y., 1918, lxxviii, 519.

Uterine fibromata. C. A. CASTANO. Semana méd., Buenos Aires, 1918, xxv, 69, 371.

A case of chorio-epithelioma. BLANC Y FORTACIN. Arch. de ginec., obst. y pediat., Barcelona, 1918, xxxi, 188.

Sterility due to retrodisplacement of the uterus; non-operative and operative treatment. E. L. DORSETT. J. Missouri St. M. Ass., 1918, xv, 350.

Surgical treatment of procidentia uteri. H. HAGERTY. J. Mich. St. M. Soc., 1918, xvii, 391.

The surgical cure of uterine prolapse. H. P. COSTOBADIE. Brit. M. J., 1918, ii, 370.

Presentation of cases treated by radium for hæmorrhages due to benign causes. T. J. WATKINS. Surg. Clin. Chicago, 1918, ii, 1033.

Radiotherapeutic methods in the treatment of uterine hæmorrhage. J. A. CORSCADEN. Am. J. Reontgenol., 1918, v, 417. **[158]**

Infantilism and other hypoplastic conditions of the uterus. E. NOVAK. J. Am. M. Ass., 1918, lxxi, 1101.

Dysmenorrhœa; its pathology and modern aspect. C. A. CASTANO. Semana méd., Buenos Aires, 1918, xxv, 395.

Adnexal and Periuterine Conditions

Hydatiform mole and cystic degeneration of the ovaries. C. LANZA. Semana méd., Buenos Aires, 1918, xxv, 217.

Ovary; corpus luteum. O. T. OSBORNE. N. Y. M. J., 1918, cviii, 447. **[159]**

Pathogenesis and pathology of phlegmons of the broad ligament. C. A. CASTANO. Rev. Univ. de Buenos Aires, 1918, xv, 219.

Contribution to the study of tumors of the broad ligament. M. SERFATY. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 340.

Sarcoma of the round ligament. G. MOENCH. Deutsche med. Wchnschr., 1918, xliv, 1021.

Salpingitis and its treatment. T. H. PLANK. Clinique, Chicago, 1918, xxxix, 412.

External Genitalia

A case of external feminine pseudo-hermaphrodism. C. L. GARCIA. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 315.

Circumcision in woman. P. PELAEZ. Prog. de los clin., Madrid, 1918, Supp., No. 170.

Treatment of vesicovaginal fistulæ. I. A. SCUDDER. Indian M. Gaz., 1918, liii, 372.

The radical treatment of genital prolapse in women by suture of the levators and urogenital supports above the vagina. SALVA MERCADÉ. Bull. Acad. de méd., Par., 1918, lxxx, 169.

Miscellaneous

Vagotonism in gynecology. A. CASTANO. Rev. argent. de obst., y ginec., Buenos Aires, 1918, ii, 343.

Vaginal drainage in pelvic cases. F. HINCHEY. J. Missouri St. M. Ass., 1918, xv, 356.

Pelvic infection and the application of drainage. S. P. CUNNINGHAM. Texas St. J. Med., 1918, xiv, 224.

The new psychology applied to the neuroses of gynecology. W. P. GRAVES. Am. J. Obst., N. Y., 1918, lxxviii, 497.

Recent progress in gynecology. F. MCCANN. Practitioner, Lond., 1918, ci, 194. **[160]**

Discussion of the proper time to operate upon gynecological cases. H. B. REPLOGLE. Hahneman. Month., 1918, liii, 583.

OBSTETRICS

Pregnancy and Its Complications

Diagnosis of ectopic pregnancy. F. A. RHODES. Am. J. Obst., N. Y., 1918, lxxviii, 580. **[161]**

Early unruptured ectopic gestation. J. EIMANN. Am. J. Obst., N. Y., 1918, lxxviii, 618.

Two and one half years' experience with the conservative treatment of eclampsia. R. MCPHERSON. N. Y. St. J. Med., 1918, xviii, 395.

Exlampsia gravidarum and parturientium. J. K. BRAMMER. Therap. Gaz., 1918, xlii, 690.

Treatment of obstetrical eclampsia by morphine. C. E. ROE. Med. Ibera, Madrid, 1918, iv, 297.

Cæsarean section in eclampsia. C. G. STRICKLAND. Penn. M. J., 1918, xxii, 8. **[161]**

Successful cæsarean section for eclampsia. A. Z. C. CRESSY. Brit. M. J., 1918, ii, 433.

Is cæsarean section justifiable in eclampsia and placenta prævia? G. L. BRODHEAD. N. Y. St. J. Med., 1918, xviii, 389.

Modern cæsarean section. N. W. EMERSON. N. Eng. M. Gaz., 1918, liii, 441.

Three cases of deferred abdominal cæsarean operation. E. A. BOERO. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 305.

The passing of the curette or the conservative treatment of abortion. G. C. MOSHER. J. Missouri St. M. Ass., 1918, xv, 347.

End-results of a provoked abortion. E. A. FOX. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 329.

Utero-abdominal abortion. C. A. CASTANO. Semana méd., Buenos Aires, 1918, xxv, 149. **[161]**

Indications and limitations of the induction of labor. R. C. NORRIS. Am. J. Obst., N. Y., 1918, lxxviii, 507. **[161]**

Placenta prævia. MUELA. Arch. de ginec., obst. y pediat., Barcelona, 1918, xxxi, 192.

The present-day conceptions regarding pregnancy. J. B. GONZALEZ. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 345.

Angular pregnancy. C. MOENCKEBERG. Rev. Asoc. méd. argent., Buenos Aires, 1918, xxix, 69.

A positive Wassermann reaction which changed to a negative at the termination of pregnancy. M. L. MENTEN. Am. J. Obst., N. Y., 1918, lxxviii, 514. **[162]**

A plea for prenatal care and the end-results of the hygiene of pregnancy. J. R. GARBER. Am. J. Obst., N. Y., 1918, lxxviii, 566.

The state and prenatal hygiene. E. MCCONNELL. Brit. M. J., 1918, ii, 365. **[162]**

Acute endocarditis in pregnancy. G. S. CAMERON. Canad. M. Ass. J., 1918, viii, 891.

The heart in pregnancy and in anæsthesia. J. MACKENZIE. Boston M. &. S. J., 1918, clxxix, 473.

Hernia during pregnancy cured after labor. FRANCO. Arch. de ginec., obst. y pediat., Barcelona, 1918, xxxi, 190.

Ovarian cyst and pregnancy. DUVIC. Gaz. hebd. d. sc. méd., Bordeaux, 1918, xxxix, 139.

Case of pregnancy in a uterus didelphys. E. P. BARNARD. Am. J. Obst., N. Y., 1918, lxxviii, 615.

Labor and Its Complications

Clinical comparison between pubiotomy and symphyseotomy. T. A. CHAMORRO. Semana méd., Buenos Aires, 1918, xxv, 175, 332.

Value of early diagnosis in contracted pelvis. G. PUENTE. Arch. de ginec., obst., y pediat., Barcelona, 1918, xxxi, 193.

The advantages of rectal over vaginal examinations during labor. R. A. BARTHOLOMEW. Am. J. Obst., N. Y., 1918, lxxviii, 576.

Use of the douche pan in the second and third stages of labor. C. J. ANDREWS. Am. J. Obst., N. Y., 1918, lxxviii, 595.

A delivery room technique. S. B. BLAKELY. Am. J. Obst., N. Y., 1918, lxxviii, 537.

Complete laceration of the perineum. G. M. BOYD. Am. J. Obst., N. Y., 1918, lxxviii, 621.

Use and dosage of pituitrin. R. B. DE BENGOA. Siglo méd., Madrid, 1918, lxv, 749.

Anæsthesia in labor with special reference to prognosis. T. E. COSTAIN. Clinique, Chicago, 1918, xxxix, 431.

A new method of producing analgesia. N. L. KNIPE. Am. J. Obst., N. Y., 1918, lxxviii, 619.

The use and abuse of pituitary extract. G. W. KOSMAK. J. Am. M. Ass., 1918, lxxi, 1117.

Scopolamine-morphine amnesia in labor. W. R. LIVINGSTON. Am. J. Obst., N. Y., 1918, lxxviii, 544.

Complete uterine rupture treated by the Boero method. E. MAZZINI. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 329.

Rupture of the uterus. R. Y. SULLIVAN. Am. J. Obst., N. Y., 1918, lxxviii, 589. **[163]**

Puerperium and Its Complications

The establishment and maintenance of breast feeding. J. P. C. GRIFFITH. N. Y. St. J. Med., 1918, xviii, 411.

The abuse of the diagnosis of puerperal septicæmia. MAGALHAES and others. Brazil méd., 1918, xxxii, 315.

Blood bacteriology in puerperal infection. POTOCKI. Ann. de gynéc. de d'obst., Par., 1918, lxxii, 129.

Report of an interesting case of puerperal infection and psychosis. S. B. SCHENCK. Am. J. Obst., N. Y. 1918, lxxviii, 596.

Puerperal uterine gangrene. E. ZARATE. Semana méd., Buenos Aires, 1918, xxv, 439. **[163]**

Miscellaneous

Obstetrics in war time. A. W. AUSEMS. Nederl. Tijdschr. v. Geneesk., 1918, ii, 863.

Some causes of stillbirth. J. C. EDGAR. N. Y. St. J. Med., 1918, xviii, 406.

A unique cause of stillbirth. C. HALL. Med. J. Australia, 1918, ii, 286.

Intra-uterine or fœtal ichthyosis. D. IRAETA. Rev. argent. de obst. y ginec., Buenos Aires, 1918, ii, 335.

Infant mortality; theory and results. D. M. LEWIS. Boston M. & S. J., 1918, clxxix, 501.

Pituitrin, its uses and abuses. J. A. BROBERG. Minnesota Med., 1918, i, 386.

To what end is birth control leading us? F. E. LEAVITT. J.-Lancet, 1918, xxxviii, 569.

The advisability of youth of parents. E. L. PICKHARDT. Med. Fortnightly, 1918, i, 213.

Obstetrical paralysis. E. RODHE. Hygiea, Stockholm, 1918, lxxx, 1041.

Treatment of prematurity. R. TAYLOR. J. Am. M. Ass., 1918, lxxi, 1123.

An efficient and inexpensive incubator. H. THOMS. Am. J. Obst., N. Y., 1918, lxxviii, 542.

The funnel pelvis; with a report of 106 cases. H. WILLIAMSON. Am. J. Obst., N. Y., 1918, lxxviii, 528.

An obstetric clinic; presentation of two cases. C. B. REED. Surg. Clin. Chicago, 1918, ii, 1037.

GENITO-URINARY SURGERY

Kidney and Ureter

Discussion of the scientific value and use of Ambard's constant. D. V. RUIZ. Gac. méd. de Carácas, 1918, xxv, 187.

Dendritic calculi in the kidney. G. G. ROSS. U. S. Nav. M. Bull., 1918, xii, 720.

Cases of kidney calculus observed at an urologic center. ROCHET and BOULOUNEIX. J. d'urol., Par., 1918, vii, 225.

Kidney stone. C. M. MCKENNA. Surg. Clin. Chicago, 1918, ii, 1019.

Two instances of kidney calculi; one exhibiting a sequela of primary carcinoma and the other of persistent sinus formation from the ureter to the epidermis. J. E. DAVIS. J. Mich. St. M. Soc., 1918, xvii, 387.

Urinary calculi; diagnosis and treatment. E. C. BAYNARD. J. So. Car. M. Ass., 1918, xiv, 253.

Two cases of renal tuberculosis treated by nephrectomy. M. MACINTOSH. Semana méd., Buenos Aires, 1918, xxv, 312.

The bacteriology of tuberculous kidneys. L. H. SPOONER. J. Med. Research, 1918, xxxix, No. 1. **[164]**

A study of the acid-base equilibrium of the blood in naturally nephropathic animals and of the functional capacity of the kidney in such animals following an anæsthetic. W. DEB. MACNIDER. J. Exp. Med., 1918, xxviii, 501. **[164]**

Treatment of war traumatisms of the kidney and of the ureter at base hospitals. ROCHET. J. d'urol., Par., 1918, vii, 337. **[165]**

Case report and kidney anomaly. C. R. MELOY. Grace Hosp. Bull., 1918, iii, 13.

Kidney and ureter abnormalities. T. N. HEPBURN. Ann. Surg., Phila., 1918, lxviii, 294. **[166]**

Pyelonephritis. H. CULVER. Surg. Clin. Chicago, 1918, ii, 797.

A bacteriological study of seventy cases of urinary infection with special reference to pyelitis. K. F. C. BRUNNICK. Med. J. Australia, 1918, ii, 23. **[167]**

A case of traumatic rupture of the kidney with delayed hæmaturia. R. W. ANGEVINE. J. Am. M. Ass., 1918, lxxi, 1380.

A contribution on focal renal injections. L. J. ROTH. Calif. St. J. Med., 1918, xvi, 460.

Ureteral stone. C. M. MCKENNA. Surg. Clin. Chicago, 1918, ii, 1024.

Consideration of the retrograde movement of ureteral calculi. H. L. KRETSCHMER. J. Am. M. Ass., 1918, lxxi, 1355.

Stricture of the ureter. ROEDELIUS. Deutsche med. Wchnschr., 1918, xliv, 1007.

Bladder, Urethra, and Penis

An unusual type of vesical calculus. B. BASHINSKI. Arch. Pediat., 1918, xxxv, 615.

Calculus impacted in a vesical diverticulum removed by high frequency cauterization. H. W. E. WALTHER. J. Urol., 1918, ii, 325. [167]

A case of vesical calculus in an infant. A BORJA. Brazil-méd., 1918, xxxii, 286.

Traumatic urinary stricture. LEGUEU. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 616.

Bladder tumors. A. NEANDER. Hygiea, Stockholm, 1918, lxxx, 753.

Fulguration treatment of tumors of the bladder. H. L. KRETSCHMER. Surg. Clin. Chicago, 1918, ii, 821.

Papilloma of bladder. C. M. MCKENNA. Surg. Clin. Chicago, 1918, ii, 1017.

Diverticula of the bladder. E. S. JUDD. Ann. Surg., Phila., 1918, lxviii, 298.

Classification of the disturbances of sphincteric control resulting from wounds and contusions of the lumbosacral region. F. CATHELIN. J. Urol., 1918, ii, 329.

Patient with a paravesical shell splinter during a year in active war service. PILLET. Paris chirurg., 1918, x, 52.

Exstrophy of the bladder; surgical research report. E. L. MOORHEAD. Surg. Clin. Chicago, 1918, ii, 1005.

Errors in the operative treatment of urethral stricture. L. E. SCHMIDT. Surg. Clin. Chicago, 1918, ii, 815.

Urethral calculi. C. C. MAPES. Am. J. Surg., 1918, xxxii, 249.

Fulguration treatment of urethral caruncle. H. L. KRETSCHMER. Surg. Clin. Chicago, 1918, ii, 833.

Autoplastic methods applicable to the treatment of urethral fistulæ following war wounds. F. CATHELIN. J. d'urol., Par., 1918, vii, 267. [168]

Operative treatment of urethral fistula. L. E. SCHMIDT. Surg. Clin. Chicago, 1918, ii, 811. [168]

Painless meatotomy. L. L. MICHEL. N. Y. M. J., 1918, cviii, 461. [169]

Genital Organs

The etiology and treatment of testicular neuralgias caused by adhesive vaginalitis. I. N. POSADOS. Semana méd., Buenos Aires, 1918, xxv, 137.

Case of orchitis and deafness. D. MCKENZIE. Proc. Roy. Soc. Med., 1918, xi, Sect. Otol., 79.

Transverse ectopy of the testis with masculine uterus. T. KIMURA. Ann. Surg., Phila., 1918, lxviii, 420.

Acute epididymitis. C. M. MCKENNA. Surg. Clin. Chicago, 1918, ii, 1028.

The surgical treatment of gonorrhœal epididymitis. M. E. BLAHD. J. Urol., 1918, ii, 321. [169]

Gonococcal epididymitis in the soldier. A. H. PEACOCK. Northwest Med., 1918, xvii, 296.

Epididymotomy in military surgery. L. HERMAN. U. S. Nav. M. Bull., 1918, xii, 623.

The human seminal vesicles at birth. E. M. WATSON. Ann. Surg., Phila., 1918, lxviii, 416.

Seminal vesiculography. H. J. MILLSTONE. Wisconsin M. J., 1918, xvii, 146. [169]

Calculus of the prostatic urethra. L. G. PINAULT. Bull. méd. de Quebec, 1918, xx, 41.

Some aspects of prostatic surgery, with special reference to methods of popular choice; pre- and postoperative treatment. E. P. MERRITT. J. So. Car. M. Ass., 1918, xiv, 224. [169]

Tunneling of the prostate in treatment of hypertrophied prostate. G. LUYS. Paris chirurg., 1918, x, 5. [170]

Prostatism. W. T. BRIGGS. Kentucky M. J., 1918, xvi, 334. [170]

Surgical pathology of the human prostate gland. O. S. LOWSLEY. Ann. Surg., Phila., 1918, lxviii, 399.

Perineal prostatectomy. J. CRAWFORD. J. Iowa St. M. Soc., 1918, viii, 355.

A treatment for acute anterior gonorrhœa. C. B. ADAMS. N. Y. M. J., 1918, cviii, 679.

Acriflavine in the treatment of gonorrhœa; an experimental and clinical study. E. G. DAVIS and B. E. HARRELL. J. Urol., 1918, ii, 257.

Circumcision in the presence of chancroid. J. S. VAN WINKLE. U. S. Nav. M. Bull., 1918, xii, 712.

Section of the frenum in circumcision and in frenulum brevis. SAINZ DE AJA. Med. Ibera, Madrid, 1918, iv, 269. [171]

Miscellaneous

Urinary antisepsis; the secretion of antiseptic urine following the intravenous administration of an organomercury phthalein derivative. E. G. DAVIS, E. C. WHITE, and R. ROSEN. J. Urol., 1918, ii, 277.

The secretion of antiseptic urine following the intravenous administration of acriflavine and proflavine; preliminary report. E. G. DAVIS and E. C. WHITE. J. Urol., 1918, ii, 299.

A simple and practical method of catheterization. I. A. GAELEY. Trained Nurse & Hosp. Rev., 1918, lxi, 219.

Genito-urinary tuberculosis in children. KIRMISSON. Rev. gén. de clin. et de thérap., Par., 1918, xxxii, 641.

Urinary diseases in childhood. G. LINDBERG. Hygiea, Stockholm, 1918, lxxx, 890.

Venereal disease. C. M. SMITH and O. M. LEWIS. Boston M. & S. J., 1918, clxxix, 525.

Some indicated remedies in dysuria. T. S. TURNER. Eclect. M. J., 1918, lxxviii, 513.

SURGERY OF THE EYE AND EAR

Eye

Some points in retrobulbar neuritis, with special reference to prognosis. P. H. ADAMS. Brit. J. Ophth., 1918, ii, 522.

A new form of bifocal for myopes. P. C. BARDSLEY. Proc. Roy. Soc. Med., 1918, xi, Sect. Ophth., 16.

Foreign bodies in the eye and orbit. BELOT and FRAUDET. Survey Head Surg., 1918, i, 112.

The operative treatment of traumatic coloboma of the lid. L. VON BLASKOVICS. Arch. Ophth., 1918, xlvii, 404. [172]

Operative technique of autoplastic inversion of pterygon. G. BONNEFON. Ann. d'ocul., Par., 1918, clv, 419.

Spontaneous pulsating exopthalmos. G. W. BOOT. Illinois M. J., 1918, xxxiv, 217.

The "hole in the hand" test of binocular vision. A. CANTONNET. Med. Press, 1918, cvi, 305.

Report of a case of acute bilateral dacryo adenitis. J. V. CONNOLE. U. S. Nav. M. Bull., 1918, xii, 706.

Orbital wounds. CORDS. Deutsche med. Wchnschr., 1918, xliv, 1063.

Trachoma; its importance as a public health problem. A. B. DRAIN. Texas St. J. Med., 1918, xiv, 229.

A case of multiple sclerosis with eye findings. E. R. CROSSLEY. Illinois M. J., 1918, xxxiv, 209.

Surgical treatment of retinal detachment. T. H. CURTIN. Am. J. Surg., 1918, xxxii, 177. [172]

Proptosis of the left eye. E. D. D. DAVIS. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 138.

Glioma of the retina, with report of three cases treated with radium. R. DUNCAN. Am. J. Ophth., 1918, i, 715.

Focal infections in relation to diseases of the eye. T. FAITH. Illinois M. J., 1918, xxxiv, 193.

Prognosis and treatment of ocular wounds with penetration of foreign bodies. H. FRENKEL. Arch. d'opht., Par., 1918, xxxvi, 193.

The treatment of blood cysts of the orbit. H. GIFFORD. Am. J. Ophth., 1918, i, 625. [173]

Coloboma of optic disk and choroid. G. H. GOLDSMITH. Proc. Roy. Soc. Med., 1918, xi, Sect. Ophth., 10.

Transient relapsing exophthalmos of sympathetic origin. J. DE J. GONZALEZ. Am. J. Ophth., 1918, i, 713.

The care of the eyes of infants. H. L. GOWENS, JR. Hahneman. Month., 1918, liii, 596.

A consideration of the etiology of phlyctenular disease of the eye. H. F. HANSELL. Am. J. Dis. Child., 1918, xvi, 262.

Case of double dacryocystitis. W. D. HARMER. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 171.

Old choroidal scar with fibrous band stretching from it to the disk. M. L. HEPBURN. Proc. Roy. Soc. Med., 1918, xi, Sect. Ophth., 8.

Plasmoma of the conjunctiva. K. HIWATARI. Am. J. Ophth., 1918, i, 719.

The eye in nervous diseases; introduction to neurologic ophthalmology, prepared for the N. Y. Neurosurgical School for army medical officers. W. A. HOLDERN. Survey Head Surg., 1918, i, 101.

Disturbances of visual orientation. G. HOLMES. Brit. J. Ophth., 1918, ii, 506.

The cross-eyed child neglected. J. HUME. N. Orl. M. & S. J., 1918, lxxi, 206.

Perithelioma of the orbit. H. T. JEREMY. Proc. Roy. Soc. Med., 1918, xi, Sect. Dis. Child., 50.

Modification of the cataract operation. E. JUNES. Ann. d'ocul., Par., 1918, clv, 434.

Personal experiences in the operation for senile cataract. F. ALLPORT. Illinois M. J., 1918, xxxiv, 185.

Late post-traumatic alterations of the macula. A. LA FERTA. Survey Head Surg., 1918, i, 109.

Modifications of the pupil resulting from ocular contusions and traumatic Argyll-Robertson sign. MAGITOT. Survey Head Surg., 1918, i, 106.

Total ophthalmoplegia by hydatid cyst operated upon and cured. A. M. MARQUE. Semana méd., 1918, xxv, 434.

Eye conditions in Malta, 1916 to 1917, among British troops. E. M. MAXWELL. Brit. J. Ophth., 1918, ii, 516.

Canthoplasty. F. A. MORRISON. Am. J. Ophth., 1918, i, 727.

A luminous type for estimating the light sense in night blindness. F. MOXON. Proc. Roy. Soc. Med., 1918, xi, Sect. Ophth., 11.

Some eye injuries that can be prevented. W. O. NANCE. Illinois M. J., 1918, xxxiv, 199.

Pneumococcal infections of the eye. T. R. PAGANELLI. J. M. Soc. N. J., 1918, xv, 341.

Neuroretinitis after chicken-pox. L. PATON. Proc. Roy. Soc. Med., 1918, xi, Sect. Ophth., 12.

A mixed tumor of the lachrymal gland. A. O. PFINGST. South. M. J., 1918, xi, 587.

Displacement of the auditory ossicles shown by X-rays. R. W. A. SALMOND. Arch. Radiol. & Electrotherap., 1918, xxiii, 125.

Case of Mooren's ulcer. F. A. C. TYRRELL. Proc. Roy. Soc. Med., 1918, xi, Sect. Ophth., 7.

The influence of function upon the structure of the eye. E. UHLENHUTH. Arch. Ophth., 1918, xlvii, 401. [173]

A case of hyaline bodies on the optic disk. G. VINER. Brit. J. Ophth., 1918, ii, 426. [174]

The ocular lesions produced by dichlorethylsulphide. A. S. WARTHIN, C. V. WELLER, and G. R. HERRMANN. J. Lab. & Clin. Med., 1918, iv, 785.

Hysterical disorders of vision. L. R. YEALLAND. Proc. Roy. Soc. Med., 1918, xi, Sect. Ophth., 13.

Ear

Fibromata of auditory pavilion. R. BECCO. Semana méd., Buenos Aires, 1918, xxv, 444.

Obstruction of the lachrymonasal duct. T. W. KELSEY. Northwest Med., 1918, xvii, 298.

The value of ear examinations to the neurologist. I. H. JONES. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 881.

Radium in diseases of the ear. T. J. HARRIS. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 986.

Middle ear infections. C. E. PRICE. Illinois M. J., 1918, xxxiv, 204.

Mastoid operation for acute suppurative inflammation; use of "bipp." H. TILLEY. Proc. Roy. Soc. Med., 1918, xi, Sect. Otol., 69.

Surgical pathology of the mastoid. J. C. BECK. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 869.

Types of mastoid structure with special reference to their differentiation by means of stereoradiography. F. N. BIGELOW. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 887.

Chronic hæmorrhagic purpura complicated by suppurative mastoiditis. J. V. F. CLAY and G. M. GOLDEN. Hahneman. Month., 1918, liii, 588.

Normal and abnormal conditions of the mastoid. J. J. KYLE. Med. Rev. Revs., 1918, xxiv, 581.

Acute otitis media. M. M. CULLOM. South. Pract., 1918, xl, 385.

Conditions developing in chronic suppurative otitis media which should constitute the basis for exemption from military service. E. B. DENCH. Laryngoscope, 1918, xxviii, 717.

Otorhinolaryngology in 1918. L. DUFOURMENTEL. Paris méd., 1918, viii, 190.

The method of analysis of the Bárány tests in pathologic cases. L. FISHER. Laryngoscope, 1918, xxviii, 724.

Reactions of the normal labyrinth; recent experience in the United States Aviation examinations. H. HASTINGS. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 481. [174]

Malingering of the ear. A. LEWY. J. Am. Inst. Homœop., 1918, xi, 417.

Some aspects of deafness. A. E. PERKINS. Trained Nurse & Hosp. Rev., 1918, lxi, 209.

Facial paralysis in ear disease. B. M. HOWLEY. J. M. Soc. N. J., 1918, xv, 270. [174]

Enclosed septic cavities in otolaryngology. F. RUEDA. Rev. de med. y cirug., Madrid, 1918, cxxi, 65.

Pilocarpine in chronic deafness. C. M. SAUTTER. N. Y. M. J., 1918, cviii, 592.

Indications for surgical interference in case of acute suppurative conditions of the middle ear and the mastoid cells. E. M. SYKES. Texas St. J. Med., 1918, xiv, 226.

A running ear. G. J. TAQUINO. N. Orl. M. & S. J., 1918, lxxi, 203.

Ablation of the labyrinth in a case with Ménière's symptoms. C. YORKE. Brit. M. J., 1918, ii, 429.

Local anæsthesia in ear surgery. G. CANUYT and J. ROZIER. Rev. de laryngol., Par., 1918, xxxix, 413.

SURGERY OF THE NOSE, THROAT, AND MOUTH

Nose

Adenocarcinoma of the nose; report of four cases. L. M. HURD. Laryngoscope, 1918, xxviii, 757.

Double perforation of the septum nasi, with peculiar appearance of soft palate. H. J. BANKS-DAVIS. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 167.

Three cases of accessory nasal sinus suppuration. W. M. MOLLISON. Guy's Hosp. Gaz., 1918, xxxii, 332.

Treatment of gunshot wounds of the nasal sinuses. A. BLAU. Deutsche med. Wchnschr., 1918, xliv, 1133.

A case of sinusitis in an infant. E. CAMPOS. Brazil-méd., 1918, xxxii, 251.

The treatment of intranasal and accessory sinus diseases. O. J. STEIN. Illinois M. J., 1918, xxxiv, 202.

Deviation of the middle nasal septum. TOYONAJA. Sei-i-Kwai, Tokyo, 1918, xxxvii, No. 8.

Epidemic streptococcus infection of the nose and throat clinically considered. W. A. HOLLIS. J. Indiana St. M. Ass., 1918, xi, 327. [175]

Intranasal frontal sinus operation under nitrous oxide anæsthesia. D. MCKENZIE. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 137.

Case of enormous mucous polyp of the nose. V. TOMINAGO. Sei-i-Kwai, Tokyo, 1918, xxxvii, No. 9.

Transplantation of cartilage into the septum. J. F. O'MALLEY. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 139.

Repair of nose by paraffin injection. J. DONELAN. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 135.

Plastics of the nose. I. M. ALONZO. Rev. med. d. Uruguay, 1918, xxi, 514.

Reconstruction of the nose after war wound. GUISEZ. Paris méd., 1918, viii, 198.

Throat

Ulcerous tuberculosis of the upper respiratory tract. FINK. Deutsche med. Wchnschr., 1918, xliv, 1095.

Fixation of both vocal cords; tracheotomy. E. D. D. DAVIS. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 138.

Papilloma of the vocal cord cured by tracheotomy. J. M. PENICHET. Rev. de med. y cirug., Habana, 1918, xxiii, 615.

A colony of actinomyces in the crypt of a tonsil. W. D. HARMER and A. C. STEVENSON. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 161.

Primary tuberculosis of the faucial tonsils in children. A. P. MITCHELL. J. Pathol. & Bacteriol., 1917, xxi, 248.

Further observations on the radical treatment of peritonsillar abscess. C. F. THEISEN. Ann. Otol., Rhinol. & Laryngol., 1918, xxvii, 600. [175]

Simplification of the surgical treatment of peritonsillar abscess. T. H. CATES. Laryngoscope, 1918, xxviii, 764.

Intrinsic cancer of the larynx; laryngofissure and semi-demilaryngectomy one year after operation. St. C. THOMSON. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 126.

Surgical treatment of cancer of the larynx, with report of a case. J. MCCOY. N. Y. St. J. Med., 1918, xviii, 363. [175]

Early diagnosis of intralaryngeal carcinoma. D. B. DELAVAN. N. Y. St. J. Med., 1918, xviii, 360.

Perichondritis of the larynx. G. W. DAWSON. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 133.

Left recurrent laryngeal nerve paralysis in a patient suffering from tuberculosis. I. MOORE. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 167.

Epithelioma of larynx removed by "window" resection of the thyroid cartilage. H. L. LACK. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 149.

Suspension laryngoscopy; an aid in removing foreign bodies from the larynx and œsophagus. W. B. CHAMBELIN. Laryngoscope, 1918, xxviii, 744.

Lateropharyngeal abscess of unusual evolution. C. R. CASTILLA. Semana méd., Buenos Aires, 1918, xxv, 348.

Brain from a patient who presented nystagmoid movements in the pharynx and larynx. A. B. KELLY. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 141.

Pedunculated carcinoma of pharynx. A. B. KELLY. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 123.

Tumor of pharynx. G. W. DAWSON. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 134.

Mouth

Treatment of gunshot wounds of face accompanied by extensive destruction of lower lip and mandible. V. H. KAZANJIAN and H. BURROWS. Brit. J. Surg., 1918, vi, 74. [176]

The treatment of tumors of the superior maxilla. H. H. JANEWAY. Ann. Surg., Phila., 1918, lxviii, 353.

Tumor of the palate. J. DONELAN. Proc. Roy. Soc. Med., 1918, xi, Sect. Laryngol., 134.

Salivary calculus. A. BORJA. Brazil-méd., 1918, xxxii, 244.

Report of a case of symmetrical enlargement of the salivary glands. R. S. BOLES. U. S. Nav. M. Bull., 1918, xii, 719.

Roentgenographic studies of tissues involved in chronic mouth infections. A. D. BLACK. J. Am. M. Ass., 1918, lxxi, 1279.

Cancer of the oral cavity. L. D. BULKLEY. Dental Cosmos, 1918, lx, 774.

Cancer of the oral cavity, jaws, and throat; treatment by electrothermic methods. W. L. CLARK. J. Am. M. Ass., 1918, lxxi, 1365.

Acute ulcerative gingivitis. C. G. COLYER. Brit. M. J., 1918, ii, 396.

The use of heat and radium in the treatment of cancer of the jaws and cheeks. G. B. NEW. J. Am. M. Ass., 1918, lxxi, 1369.

The lymphatics of the dental region. F. B. NOYES and K. W. DEWEY. J. Am. M. Ass., 1918, lxxi, 1179.

The surgical treatment of pseudarthroses of the lower jaw following war wounds. P. SEBILEAU. Bull. et mém. Soc. de chir. de Par., 1918, xliv, 1308.

Oral sepsis; its significance and treatment. B. ROBINSON. Am. Med., 1918, xiii, 667.

Pyorrhœa alveolaris. M. B. SAUNDERS. Med. Rec., 1918, xciv, 589.

Osteotomy followed by stomatoplasty. THÉVENARD. Paris chirurg., 1918, x, 49.